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**3. Virtualization/Cloud Computing.** Want to reduce costs? Look to the cloud. With this exclusive Black Box solution, you can access back-racked PCs and virtual desktops hosted on a shared server without sacrificing high performance, **pages 14–15**.

**4. Physical/Cyber Security.** Security from internal and external threats is one of the most important topics in IT today. Lock up network ports with LockPORT™ Cables and Port Locks on **page 37**. Secure network data with EncrypTight™ on **pages 62–63**. For ultra-secure, mission-critical switching, look at our Latching Fiber Optic Switches on **page 67**.

**5. Mobility/Wireless.** The increasing presence of personal mobile devices is changing how IT professionals manage their networks. For a very cost-effective solution for either new WLAN networks or upgrading enterprise wireless, take a look at SmartPath™ Enterprise Wireless on **pages 58–59**.

**6. VoIP/Unified Communications.** The question isn't if you're going to move to a VoIP system, but when. While common in larger organizations, VoIP is now more affordable and practical for SMBs to implement. See how on **pages 68–69**.



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## WHAT YOU NEED TO KNOW

The new system for KVM matrix switching is more flexible, more extendable, and more efficient than ever before. These new configurations bring better functionality and increased productivity to organizations, especially in the post-production broadcasting and professional audio-visual industries.

For example, the new technology offers an array of ports that can be dynamically allocated as input or output. This means that ports can be connected to a CPU or connected to a console, and ports can be switched according to the users' requirements. As long as you have available ports, you can switch in any combination of inputs and outputs—it doesn't need to be a one-to-one configuration (i.e. 160-port chassis equals 80 inputs and 80 outputs).

The technology supports numerous data streams in varied combinations through extenders: video, KVM, audio, serial, USB 2.0. Because of this updated technology, switching is instantaneous, with no delay. Competitors' IP-based solutions can take up to 10–15 seconds to switch video streams.

KVM switching in general is an efficiency-creating solution. These new matrix switching systems take this flexibility and efficiency even further, especially for A/V professionals. Instead of a patchwork of switches and cables, we've developed a system that comes with digital or analog audio, serial RS-232, high-speed USB 2.0, and HID tablet support. It's also

smaller and faster, freeing up space in your data center. Plus they're cooler and quieter, eliminating excess noise and heat.

These new matrix switches enable mixing copper (CATx) and fiber optic cabling for optimal performance over long distances as well. This makes collaborative editing much more efficient. These flexible matrix switches enable you to access your expensive editing hardware from remote locations, reducing travel and meeting times, and making the approval process quicker and easier. In addition to digital video extension, the new extenders offer top-quality digital audio support. Actually, the extensive range of extenders available to use with the chassis offers connections from CPUs and other video sources to monitors, projectors, video walls, and other high-quality displays.

Seamless sharing capabilities enable you to show a video across campus while working with the audio team three doors down the hallway from your office. The HD video and digital audio extension and switching capabilities are unmatched on the market today. Simply put, using a KVM switching solution like the ServSwitch DKM and DKM FX system of chassis and extenders means zero connectivity barriers. The compact extenders (page 9) even operate as standalone point-to-point extenders, over CATx or fiber cables—or any combination of cabling an organization wants to use.



# SWITCHES



The DKM and DKM FX systems have numerous operation modes, enabling them to be tailored to suit virtually any routing application. Flexible system management via on-screen displays (OSD), network, or serial interfaces further enhances the capability of the switch, enabling efficient integration with users' custom control equipment (for example, hotkey switching macro keypads or touchscreens).

In addition to matrix switching, these KVM chassis and extender systems can be used in single-head, dual-head, and quad-head

configurations. These switching modes are especially ideal for broadcast pre- and post-production or control rooms. The devices perform the task of converting signals within the system and their combination and duplication where appropriate. We have an extensive range available from which our system designers can configure a full solution based on your specific requirements. This modular system is assembled at Black Box to fit your application. To discuss your application, call our FREE Tech Support at 724-746-5500.



## ServSwitch™ DKM and DKM FX Matrix Switches

For flexible and super-fast crosspoint switching of Full-HD video, USB 2.0, bidirectional audio, and serial data interfaces.



- A scalable, highly reliable KVM matrix switching and DVI routing system.
- Very flexible. Any port can be input or output, connects via fiber optic or CATx cabling.
- Supports high-quality, full-frame DVI-D video.
- Instantaneous video switching. Virtually no delay or blanking.
- Full HD compatible. Display digital resolutions up to 1920 x 1080, 1920 x 1200, with 24-bit color depth.
- Four chassis sizes, from 48 to 288 ports. I/O boards fit in all types of chassis.
- Each port is I/O regardless of position of rack or location on each board.
- 48, 80, and 160 ports feature speeds up to 6.5 Gbps.
- 288 ports offer up to 3 Gbps.
- Can be used with remote ServSwitch DKM extenders for extra-long links.
- Choose from CATx and single-mode fiber SFP modular card interfaces. Single-mode fiber interfaces will also work over multimode fiber.
- ♦♦ **WARRANTY** — 2 Years

This chassis-based, modular crosspoint switching system enables you to switch and extend HD video, USB 2.0, audio, and serial data over extremely long distances. Use it in any application where many users have to interface with CPUs and other high-end AV equipment supporting high-quality video. Plus, it works as a matrix switch.

The DKM FX is especially ideal for enterprise networks and mission-critical control/command rooms, as well as video production or broadcasting applications where HD video is everything. Many users can connect their KVM consoles to various multimedia sources (computer, CPUs, servers, etc.), either locally or in a distant room or office via the switch.

ServSwitch DKM DVI-D KVM switches offer fewer ports for smaller enterprise switching, with either 8 or 16 ports for up to 32 CPUs. Like the FX, these chassis offer rich interface options for various video formats and peripherals.

ACX048, ACX080, ACX160, ACX288

**Call 888-327-3114 for  
design and proposal or go  
to [blackbox.com/go/DKM](http://blackbox.com/go/DKM).**



## ServSwitch DKM and DKM FX Matrix Switches (Continued)

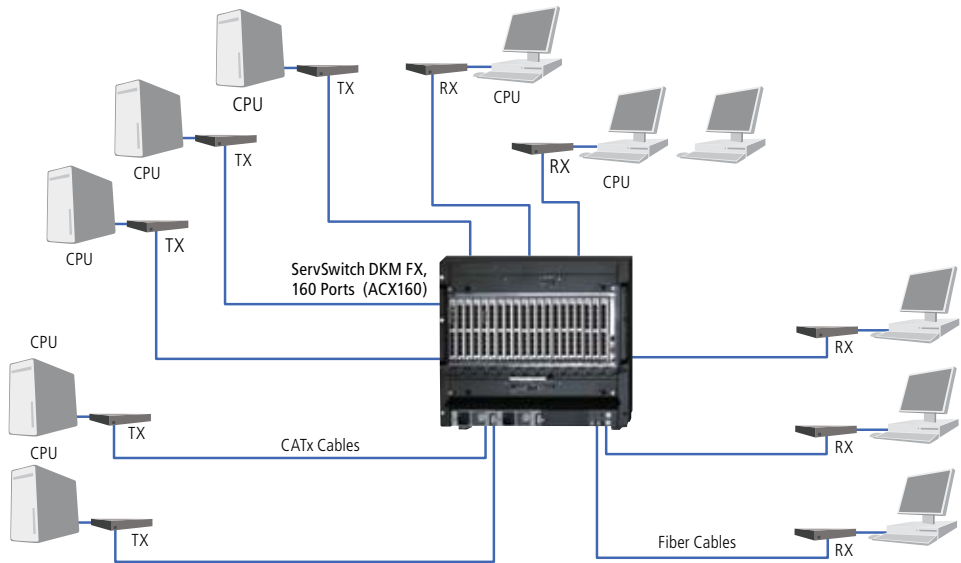
### ServSwitch DKM Legend

TX = Transmitters. Can be single-, dual-, or quad-head.

RX = Receivers. Can also be single-, dual-, or quad-head.

**Cabling:** These diagrams only show one cable for space reasons. The DKM and DKM FX switches use one, two, or four strands of CATx cabling for single-, dual-, or quad-head applications, or multimode or single-mode fiber cabling, in pairs.

### Crosspoint Matrix Configuration



### KVM Matrix Switch

The DKM KVM Matrix Switch operates in different configurations connecting 8, 16, or 32 inputs (computers) with up to 8 or 16 outputs (users). The ServSwitch DKM FX offers a fully scalable matrix of up to 288 ports freely assignable to user or computer ends.

Each user is connected to the DKM system through a DKM receiver unit. DKM transmitters and receivers are available with a large number of interface combinations.

Control the switch with the serial (RS-232) port, hotkeys, the OSD, or via a Java app. The matrix configuration is ideal for control rooms, post-production, and digital signage applications. The system works particularly well within the broadcast operations environment.

### Other Modes

In a control room setting, the OSD enables the user to switch monitors between any connected CPU, and the hotkeys enable the user to switch between one USB keyboard/mouse for all the monitors. You can easily select your target from the list of available CPUs.

Share Mode enables more than one user to have access to the same CPU at the same time. It is often used to enable a super administrator to troubleshoot or apply updates.

Additionally, the switches enable port grouping, meaning you can partner any combination of ports and ensure they switch in tandem (presets). This way, when you switch CPUs, monitors being used in Share Mode follow automatically.



## ServSwitch DKM Modular Housing

Flexible, modular chassis for the DKM and DKM FX system.



- Connect users and computers to your ServSwitch DKM/DKM FX while extending them simultaneously over long distances.
- 2-, 4-, 6-, or 21-port housing available with or without redundant power.
- Choose the cable media depending on your distance requirements. Over CATx, go up to 460 feet (140 m); over multimode fiber, go 3281 feet (1000 m); and over single-mode fiber, go up to 6 miles (10 km).
- Rackmount kit available for mounting a 6-port housing, or a 4-port and 2-port housing, or three 2-port housings into a single 19" rack space.
- Peripheral options for USB HID, transparent USB 2.0, RS-232, analog, and digital audio.

ACXMODH2, ACXMODH2R, ACXMODH6R, etc.  
**Call for details.**

### ServSwitch DKM Transmitter Modules

Order one transmitter for each computer connected to the DKM.

- Distance determined by cabling.
- Get DVI-D video with resolutions up to 2048 x 1152 at 60 Hz over the full distance.



ACX1MT series  
**Call for details.**

### ServSwitch DKM Receiver Modules

Use one receiver for each user within the DKM system.

- Distance determined by cabling.
- Peripheral options for USB HID, transparent USB 2.0, RS-232, analog, and digital audio.



ACX1MR series  
**Call for details.**

*NOTE: Single-mode KVM extender modules also can be operated over multimode fiber.*

*NOTE: Combine extender modules depending on your individual needs. These new DKM components are part of a modular system. You will need to contact Black Box to have them assembled to fit your application. To configure your ServSwitch DKM or DKM FX setup, call our FREE Tech Support.*

**Call 888-327-3114  
for proposal and design.**



## ServSwitch DKM KVM Compact Extenders

Flexible, modular KVM extension system takes video, USB, and serial peripherals long distances.



*ServSwitch DKM Transmitter CATx Single DVI, USB HID Plus Digital Audio (ACX1T-12D-C)*



*ServSwitch DKM Receiver CATx Dual DVI Plus USB HID (ACX1R-22-C)*

- Connect users and computers to your ServSwitch DKM/DKM FX while extending them simultaneously over long distances.
- Order one transmitter for each computer connected to the DKM.
- Use one receiver for each user within the DKM system.
- Also work as standalone, point-to-point KVM extension without a DKM switch.
- Provide the widest range of possible extension combinations to exactly fit your application.
- Peripheral options for USB HID, transparent USB 2.0, RS-232, analog, and digital audio.
- Compact housing enables high-density mounting within 19" racks (up to four devices in 1U).

*NOTE: Single-mode KVM extender modules also can be operated over multimode fiber.*

*NOTE: Combine extender modules depending on your individual needs. These new DKM components are part of a modular system. You will need to contact Black Box to have them assembled to fit your application. To configure your ServSwitch DKM or DKM FX setup, call our FREE Tech Support.*

**Call 888-327-3114 for proposal and design.**

Find your KVM extender *FAST!*

Our on-line selector makes it easy.

- First, choose your connections: interconnect cable, peripheral support, and extender options.
- Then, choose your video or audio options and distance. The selector will show you extender options.

 A screenshot of the 'KVM Extender Selector' web application. The interface is divided into several sections: 'Connection' with dropdowns for 'Interconnect Cable' and 'Console Keyboard & Mouse'; 'Peripheral Support' with a checkbox for 'USB Devices'; 'Audio Support' with checkboxes for 'No audio support', 'Unidirectional support', and 'Bidirectional support'; and 'Video and Audio' with dropdowns for 'Video' and 'Video Heads' (options 1, 2, 4). A 'Find extenders' button is at the bottom right. A 'Helpful hints' link is at the bottom left.

Just go to: [blackbox.com/go/Configurators](http://blackbox.com/go/Configurators)



## ServSwitch Agility DVI, USB, and Audio Extenders over IP

Go farther, do more with these digital KVM-over-IP extension, matrix switching, and multicasting solutions.



ACR1000A

- Scalable system to grow your network as needed.
- New flexible topology. Configure your network to suit your needs: point-to-point extension, KVM switching, single-target sharing, or multicasting.
- Deliver perfect digital video—no loss! Great for digital signage applications.
- No-loss compression, low latency, pixel-perfect video, and control.
- Features keyboard/mouse emulation, and emulation for other standard HIDs, such as touchscreens or flash drives.
- New dual-link and dual-head models available (see pages 12–13).
- Fast switching times—less than one second for video.
- ♦♦ **WARRANTY** — 2 Years

ServSwitch™ Agility DVI, USB, and Audio over IP Extenders enable you to do more and go farther with perfect digital video over nearly unlimited distances.

Standard CATx cabling delivers IP traffic up to 328 feet (100 m). For longer distances, add a network switch for an additional 328 feet.

The flexible topology of the ServSwitch Agility gives you extension option applications that are brand new for KVM extenders. The Agility can be a KVM switch, a sharing portal, a DVI extender, and much, much more—it's up to you how you decide to configure it.

It's also a very useful tool for multicasting video over an IP network, which makes the ServSwitch Agility ideal for use in digital signage and healthcare, education, and corporate applications where you need to share video content with distant users.

The Agility line includes a transmitter/receiver kit (ACR1000A), and individual transmitter (ACR1000A-T) and receiver (ACR1000A-R) units, plus new dual-head/dual-link versions (ACR1002A-T and ACR1002A-R).

In matrix and TCP/IP network sharing applications, you will also need a ServSwitch Agility Controller Unit (ACR1000A-CTL). It includes a management suite for remotely and securely managing the transmitter and receiver units. Define new content channels,

restrict and enable access privileges, push control, and more.

Once you plug the controller unit into your network, you can begin managing devices, users, and channels. The iPATH™ interface features a useful on-screen dashboard that gives you a current overview of the system. It is continually refreshed so you always have the most up-to-date system information.

### Point-to-point.

In the most straightforward configuration, use the ServSwitch Agility as a point-to-point KVM extender. Use CAT6 cable to connect a transmitter and a receiver to deliver perfect DVI, audio, and USB.

If you need cable runs longer than 328 feet, add another network switch every 328 feet. You can configure this setup to go to multiple screens at one time or add new units for additional functionality.

### Switching network.

Enable your network to perform like a KVM switch with the ServSwitch Agility. When you change channels on the receiver, you switch DVI, audio, and USB while the transmitters not in use continue to emulate the previously attached devices. Create a KVM switch with as many users as you want—just keep adding receivers. With mixed channels, combine video, audio, and USB devices from different destinations.



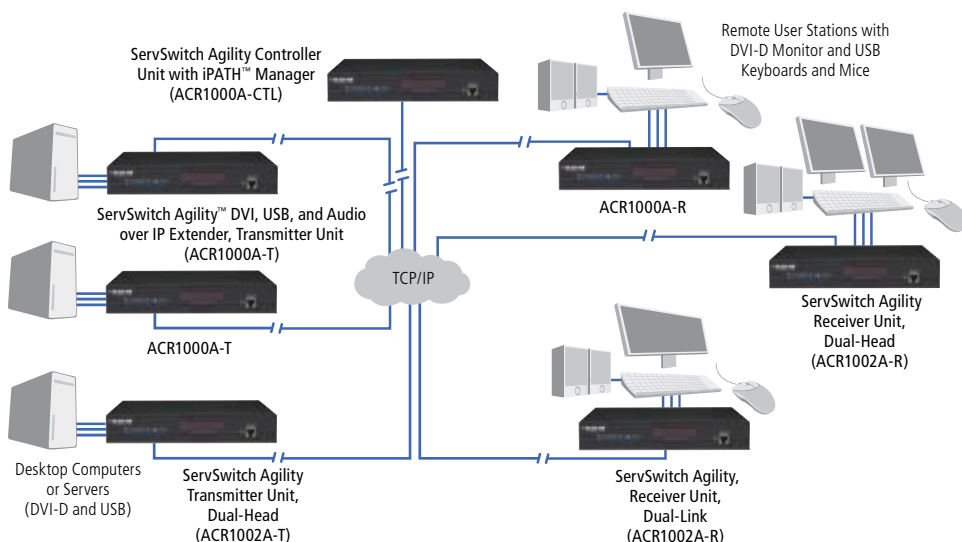
### Single-target sharing.

In this configuration, multiple users can share a single remote computer. Users can connect:

- In View-Only Mode, which shows only the video feed.
- In Share Mode, an open connection is available for all users to use the connected devices at the same time.
- In Exclusive Mode, one user locks out the other users, preventing them from viewing or sharing the connection, with the exception of network administrators.

### Multicasting.

This unique feature enables the ServSwitch Agility to multicast video and audio content over an IP network to as many receivers as you want with no distance limits, depending on the network. Just use the Agility with a network switch that includes IGMP snooping (for more explanation, see the Black Box Explains on **pages 12 – 13**).



### Possible applications:

- Distribute high-quality medical images to staff across large medical facilities. ServSwitch Agility uses standard Ethernet equipment, so the networking hardware doesn't need to be updated.
- In command and control room setups, multicast video and data to receiver units between LCD display walls.
- Media post-production suites become collaborative. Machine rooms store the media assets and hardware, and can distribute them throughout a post-production facility.
- Get real flexibility for your digital signage network. All you need is an IP network in the installation, and you can easily deliver content from one playout device via DVI.
- Also for digital signage, use the ServSwitch Agility to switch between multiple video sources.
- Deliver rich media experiences in public spaces, such as museums or libraries. The flexibility of the system makes reconfiguring your implementation a snap.

*For more information, see pages 12–13.*





## ServSwitch Agility DVI, USB, and Audio Extenders over IP (Continued)



ACR1002A-R



ACR1002A-T

### Dual-head or dual-link video options.

The flexible topology of the ServSwitch Agility now supports dual-head or dual-link multimedia applications where you need access to two video heads on each channel or high-resolution screens, respectively. Just order the new dual-head transmitter and receiver units (ACR1002A-T and ACR1002A-R).

The non dual-head, single-link DVI-D Agility models (ACR1000A, ACR1000A-T, ACR1000A-R) support video resolutions up to 1920 x 1200. In contrast, the ACR1002A-T and ACR1002A-R versions provide dual-link DVI-D resolutions up to 2560 x 1600 or

dual-head extension for each video channel at 1920 x 1200.

With dual-link support, you can use the Agility receivers with extra-large HD screens, such as displays used for broadcasting, digital film, or high-end graphics editing, as well as dual-monitor setups, as used in medical imaging or process engineering. Use two DVI-D monitors at a remote workstation for maximum productivity and viewing capabilities. **High-quality, real-time video either way.**

All ServSwitch Agility units deliver a high-performance user experience, whether you're using a single-head or dual-head setup. Built-in

## Black Box Explains

### Multicasting video over a LAN: Use the right switch.

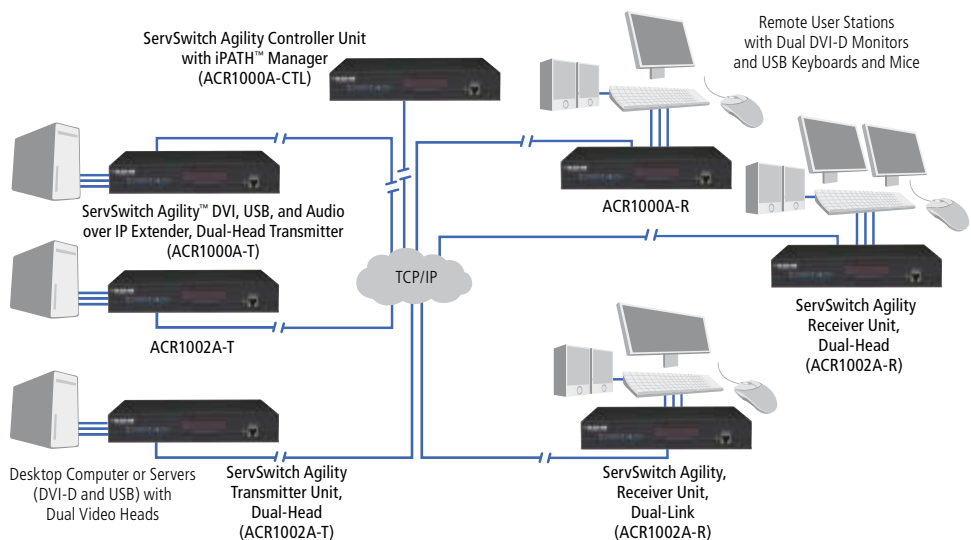
In KVM extension applications where you want to distribute HD video across a network, you need to understand how it works and what kind of networking equipment to use with your extenders.

Think of your network as a river of data with a steady current of data moving smoothly down the channel. All your network users are like tiny tributaries branching off this river, taking only as much water (bandwidth) as they need to process data. When you start to multicast video, data, and audio over the LAN, those streams suddenly become the size of the main river. Each user is then basically flooded with data and it becomes difficult or impossible to do any other tasks. This scenario of sending transmissions to every user on the network is called broadcasting, and it slows down the network to a trickle. There are network protocol methods that alleviate this problem, but it depends on the network switch you use.

#### Unicast vs. multicasting, and why a typical Layer 2 switch isn't sufficient.

Unicasting is sending data from one network device to another (point to point); in a typical unicast network, Layer 2 switches easily support these types of communications. But multicasting is transmitting data from one network device to multiple users. When multicasting with Layer 2 switches, all attached devices receive the packets, whether they want them or not. Because a multicast header does NOT have a destination IP address, an average network switch (a Layer 2 switch without supported capabilities) will not know what to do with it. So the switch sends the packet out to every network port on all attached devices. When the client or network interface card (NIC) receives the packet, it analyzes it and discards it if not wanted.





video encoding technology delivers the very best picture available and minimizes bandwidth usage to process full-screen moving video in real time. With 1:1 pixel mapping, digital video received remotely is the same as the digital video leaving the local computer.

Plus, there’s never a loss of clarity—which makes the Agility ideal for color-controlled environments, such as visual media or medical imaging applications where groups of users need to collaborate in real time on projects.

Item	Code	List Price
ServSwitch Agility DVI, USB, and Audio Extenders over IP Kit (Single-Head)	ACR1000A	<b>\$2095.95</b>
Transmitter	ACR1000A-T	<b>\$1049.95</b>
Receiver	ACR1000A-R	<b>\$1049.95</b>
Dual-Head Transmitter	ACR1002A-T	<b>\$1574.95</b>
Dual-Head Receiver	ACR1002A-R	<b>\$1774.95</b>

**You may also need...**  
Controller Unit      ACR1000A-CTL      **\$4989.95**

*NOTE: For rackmounting options, contact our FREE Tech Support.*

 Learn more at [blackbox.com/go/ServSwitchAgility](https://blackbox.com/go/ServSwitchAgility)

**The solution: a Layer 3 switch with IGMPv2 or IGMPv3 and packet forwarding.**

Multicasting with Layer 3 switches is much more efficient than with Layer 2 switches because it identifies the multicast packet and sends it only to the intended receivers. A Layer 2 switch sends the multicast packets to every device and, if there are many sources, the network will slow down because of all the traffic. And, without IGMPv2 or IGMPv3 snooping support, the switch can handle only a few devices sending multicasting packets.

Layer 3 switches with IGMP support, however, “know” who wants to receive the multicast packet and who doesn’t. When a receiving device wants to tap into a multicasting stream, it responds to the multicast broadcast with an IGMP report, the equivalent of saying, “I want to connect to this stream.” The report is only sent in the first cycle, initializing the connection between the stream and receiving device. If the device was previously connected to the stream, it sends a grafting request for removing the temporary block on the unicast routing table. The switch can then send the multicast packets to newly connected members of the multicast group. Then, when a device no longer wants to receive the multicast packets, it sends a pruning request to the IGMP-supported switch, which temporarily removes the device from the multicast group and stream.

Therefore, for multicasting, use routers or Layer 3 switches that support the IGMP protocol. Without this support, your network devices will be receiving so many multicasting packets, they will not be able to communicate with other devices using different protocols, such as FTP. Plus, a feature-rich, IGMP-supported Layer 3 switch gives you the bandwidth control needed to send video from multiple sources over a LAN.



## ServSwitch InvisaPC

Provide a rich desktop experience for your users while handing control back to your IT department—at a reasonable cost.

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- Easily migrate to centralized desktop infrastructure for better management.
- Remote Desktop Protocol (RDP 7.1 or Remote FX) delivers seamless rich media, USB redirection, and enhanced security and compliance.
- Single- and dual-head DVI video options.
- Maximum resolution up to 1920 x 1200.
- Scalable solution—start small and grow with the ability to add management as needed.
- Integrates with Microsoft® MS Server 2008 R2 SP1 and Microsoft Hyper-V Server 2008 R2 SP1 for RDP 7.1 Remote FX.
- Enables soft migration from desktop computing to virtual computing without sacrificing performance.
- ♦♦ **WARRANTY** — 1 Year

The ServSwitch™ InvisaPC™ helps your organization manage its network, reduce IT capital and operating expenses, comply with company guidelines, and keep everything secure. Access back-racked PCs and virtual desktops hosted on a shared server in a high-performance, cost effective way.

### Real control

By using virtual desktop infrastructure (VDI) or Terminal Services to share a server across users, customers can “tweak” deployment costs. This also provides dedicated computing to those users who need it *when* they need it.

Moving to cloud computing with a zero client device like the InvisaPC enables IT managers to make their department more flexible and responsive. Connecting to the network via InvisaPC delivers a high-performance experience—it’s just like running any application on a local CPU even though the central system is in the data center. There are no performance issues. The technology provides full connectivity over a LAN or WAN.

### Real high performance

The InvisaPC provides integrated support for back-racked PCs and virtual desktops. The

system supports digital video, digital audio, and USB peripheral extension across IP networks. It is standards-based, so there are no upgrades to equipment, software licensing, remote management, or time-consuming IT visits to your office.

### Real green

The InvisaPC is more than 20 times more energy efficient than a desktop PC. Power consumption is 3 watts or less per device. The desktop device is small and silent; it has no fan. Plus, with reduced maintenance, the computing carbon footprint is drastically reduced.

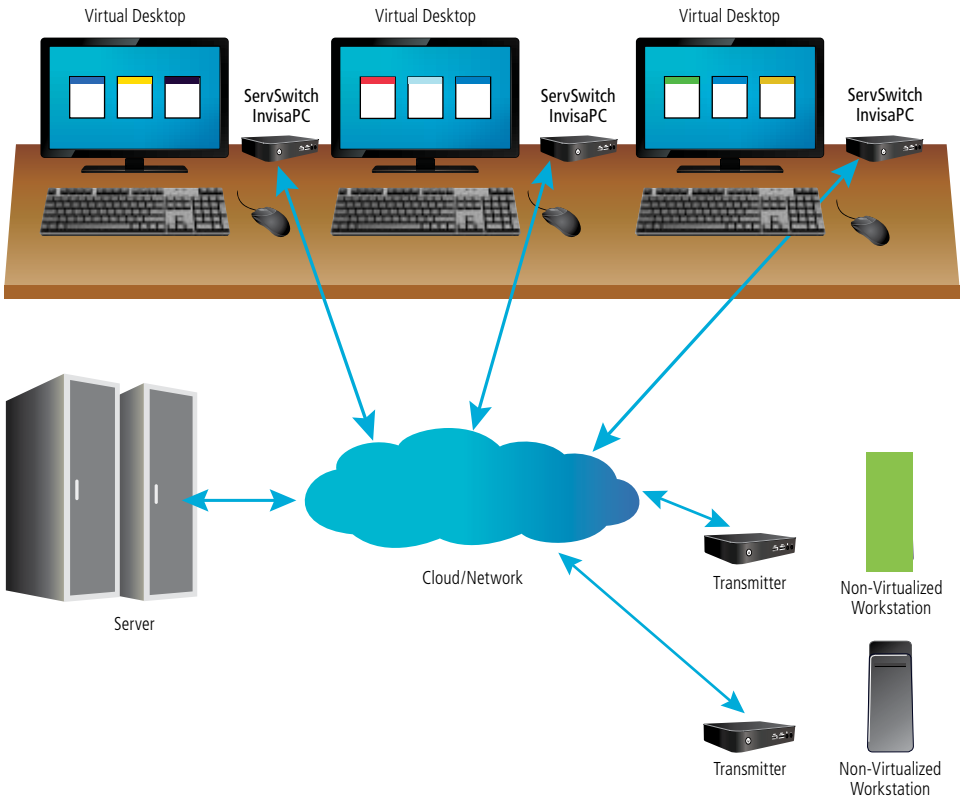
### Real cost savings

InvisaPC optimizes cost-effective deployments by basing them on the solution need. It scales from branch offices to large enterprise corporations. Plus, lower power consumption translates into lower utility bills for you.

### Real flexible setup

Desktop virtualization is deployed through a PC or server that hosts multiple virtual desktops. The workstations can be running Mac®, Linux®, or Microsoft® operating





systems. In general, the server is located in a secure data center. Each user has his or her own keyboard, monitor, and mouse setup, which is connected to a small client device. This device can be mounted directly on the rear of a monitor to save even more space at the desktop.

The InvisiPC devices are absolutely silent—no noise of running fans to distract from the working environment. The server and client are connected via the LAN or WAN; no special wiring or interconnectivity is needed.

## Find your KVM switch *FAST!*

### Our on-line selector makes it easy.

- Choose your application features: number of users and computers, connection types, interfaces, etc.
- Choose from the list of matching KVM switches to find the perfect one for your application.

**KVM Switch Selector**

**Computers to Connect**

Number of Computers: please select

Switch Connectivity

☐ USB

☐ PS2

☐ Serial

☐ Helpful hints

**Switch Features**

☐ Switch by hotkey

☐ Switch by panel

☐ On-screen display

☐ Rackmountable

☐ YEMEST

**Users to Connect**

Number of Users: please select

Number of Internet Users: please select

**Find switches**

Just go to: [blackbox.com/go/KVMSwitchSel](http://blackbox.com/go/KVMSwitchSel)



Wizard Multimedia Extenders LP

Affordable CATx-based ways to send HD VGA video to distant screens using line-powered receivers.

- Send maximum resolutions at a maximum distance of 500 feet (150 m).
- Transmit power to receivers—great for digital signage in areas short on outlets.
- Support cloning of EDID display info.
- ♦♦ **WARRANTY** — 2 Years

Simplify Full HD 1080p extension with these CATx-based VGA solutions. The four-port transmitter extends to four screens up to 500 feet (150 m)\* away using solid-conductor cable. Just add a Wizard Multimedia Extender LP Receiver (AVU4001A-RX) for each screen.

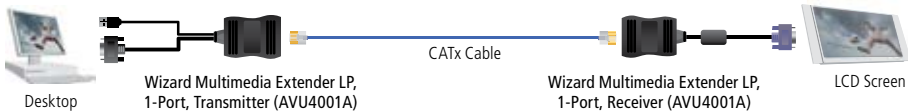
Need to reach just a single display? Then order our single-port AVU4001A kit. It includes an ultra-compact transmitter and receiver.

Even better, the receivers are line powered, so power isn't required at the remote end, ideal for rooms where you're short on outlets and for reducing cords around or behind screens.

The 4-port model also has a serial port to turn remote unit off, putting the monitor to



sleep, plus a feed-through VGA port for local monitoring. Or use the port to cascade to another 4-port transmitter—great in applications where you have more than four displays that you want to reach with your host system. You can cascade another transmitter to support up to eight screens.



*\* NOTE: Maximum distance depends on the quality of the cable and the type of VGA source and display. Low-skew cables are recommended for distances over 164 feet (50 m). For more specifications, see [blackbox.com](http://blackbox.com).*

Item	Code	List Price
Wizard Multimedia Extenders LP 4-Port Transmitter	AVU4004A	\$365.00
1-Port Transmitter/Receiver Kit	AVU4001A	\$285.95
For the AVU4004A, also order up to four receivers:		
Wizard Multimedia Extender LP Receiver	AVU4001A-RX	\$110.00

Find your video extender *FAST!*

Our on-line configurator makes it easy.

- First, choose your connections: interconnect cable, peripheral support, and extender options.
- Then, choose your video options: video standard, resolution, and the maximum number of receivers.


Just go to: [blackbox.com/go/VideoExtSel](http://blackbox.com/go/VideoExtSel)



 Learn more at [blackbox.com/go/AV](https://blackbox.com/go/AV)

### Mini Extender for DVI-D and Stereo Audio over Fiber

Extend DVI-D video and stereo audio up to 1.5 kilometers over a single strand of fiber.

- Extends Full HD video and 24-bit stereo audio over a single strand of single-mode or multimode fiber with no signal loss.
- Very compact, in-line extenders. No need to make room for an external box.
- Low power consumption.
-  **WARRANTY** — 1 Year



This super-compact extender kit enables you to transmit DVI and stereo audio signals longer distances over a single optical fiber strand—without compromising signal quality.

Delivering a Full HD video resolution to a screen up to 1.5 kilometers (0.9 mi.) away, the kit is most ideal for transmitting DVI-D video and CD-quality audio to remote digital signage.

But, supporting 24-bit true color depth, it's also great for sharing video in healthcare, education, or process engineering applications.

To reach additional screens, simply add a splitter and the additional receivers you need.

Item	Code	List Price
Mini Extender for DVI-D and Stereo Audio over Fiber Kit	AVX-DVI-FO-MINI	<b>\$795.95</b>

◆ Includes (1) transmitter, (1) receiver, and (2) power supplies.

For distributing to multiple screens, add a:

Splitter 8-Port	AVX-DVI-FO-SP8	<b>\$645.95</b>
4-Port	AVX-DVI-FO-SP4	<b>\$495.95</b>
2-Port Daisychainable*	AVX-DVI-FO-SPCS	<b>\$195.95</b>


Then add your required additional receivers:

Receiver	AVX-DVI-FO-MINI-RX	<b>\$445.95</b>
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\* NOTE: The second port is for daisy chaining to a second splitter only, not for extending to a receiver.

### 3D HDMI Fiber Extender

Extend lossless HDMI greater distances and get 3D support.

- Sends video up to 1.6 kilometers (1 mi.) at 1080i or 0.8 kilometers (0.5 mi.) at 1080p via multimode fiber cable.
- Pure digital transmission with zero compression.
-  **WARRANTY** — 1 Year



This extender is ideal for video applications that require greater distance, higher speed transmission, real-time video resolution, security, and noise immunity. HDCP compliant and Blu-ray ready, it also supports IR signal extension.

Item	Code	List Price
3D HDMI Fiber Extender	VX-HDMI-FO	<b>\$1399.95</b>

◆ Includes (1) local unit, (1) remote unit, (2) power supplies, (1) 2-m (6.5-ft.) SC/SC fiber patch cable, (2) sets of footpads, and (8) mounting magnets.



3D HDMI CATx Extender

Reach HDTV and 3D screens simply and affordably.

- Your low-priced solution for locating signage in all areas of your business.
- A fully transparent HDMI® extender designed to support all resolutions.
- Extends up to 130 feet (40 m) from the HDMI source at 1080p 24-bit color.
- Order the VSPX-HDMI-CSRX to daisychain up to 10 receivers.
- ♦♦ **WARRANTY** — 1 Year

This 3D and HDMI Deep Color-capable extender gives you greater distance for higher resolutions on HD displays.

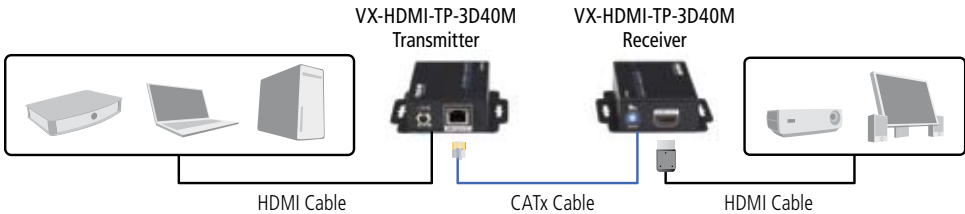
It transmits HDMI with zero compression. Over a single CAT6, it extends 1080i/720p with 24-bit color depth up to 200 feet (60 m) and



*Includes both a transmitter and a receiver, two power supplies, and wallmounting screws.*

24-bit Full HD 1080p up to 130 feet (40 m). It also works over CAT5e at shorter distances. And for 36-bit 1080p color, it can go up to 65 feet (20 m).

HDCP 1.1 compliant, the extender features eight-level equalization control for video, 7.1-channel surround sound audio support, and electrostatic-discharge (ESD) protection.



*NOTE: Maximum distances depend on the quality of the cable and type of source and display. For best performance, use low-skew cables. See [blackbox.com](http://blackbox.com) for full specifications.*

Item	Code	List Price
3D HDMI CATx Extender	VX-HDMI-TP-3D40M	<b>\$199.95</b>
To daisychain (up to 10 receivers total), order:		
MediaCento HX Receiver, Cascadable	VSPX-HDMI-CSRX	<b>\$289.95</b>

XR HDMI and IR Extender

XR: the eXtended Range HDMI solution with enhanced control.

- Uses a single CATx run, reducing cable clutter and simplifying signage setup.
- Sends uncompressed HD video and audio up to 328 feet (100 m).
- Supports IR extension and CEC passthrough.
- HDBaseT® based for greater video capacity.
- ♦♦ **WARRANTY** — 1 Year

Put a digital sign where you want it and control source devices at the screen with this extender's built-in IR extender function. Using a single CAT5e/6 cable, it provides 10.2 Gbps of HDMI bandwidth on all channels, supporting 1080p at 60 Hz and 48-bit Deep Color.

HDCP compliant, the extender transmits uncompressed LPCM signals plus compressed audio, such as DTS-HD/Dolby® TrueHD audio.



*Includes transmitter, receiver, two power supplies, an IR emitter and receiver, and wallmounting hardware.*

Item	Code	List Price
XR HDMI and IR Extender	VX-HDMI-TP-100M	<b>\$449.95</b>

*NOTE: Maximum distance depends on the quality of the cable and type of source and display. For full specifications, see [blackbox.com](http://blackbox.com).*



## MediaCento HX

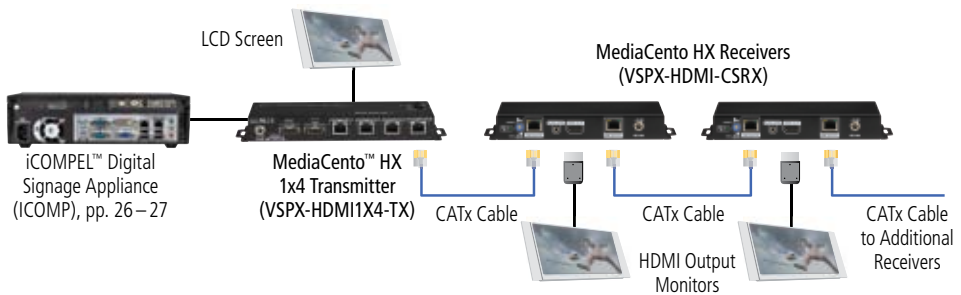
An easy, economical way to split and extend HDMI signals to digital signage in different areas.

**save  
NOW!**  
See page 2  
for details.

- Uses inexpensive CAT5e/CAT6 cable for uncompressed HDMI® signal extension.
- Supports single-link, 225-MHz (6.75-Gbps) video bandwidth.
- Local HDMI output for monitoring or cascading units.
- **WARRANTY** — 1 Year



VSPX-HDMI1X4-TX



Split and extend HDMI video and audio from a single source input over a single solid CATx cable run with MediaCento™ HX.

Use it to display video simultaneously on four different HDTV screens in lobbies and other high-traffic areas of your organization. Or daisychain up to 10 VSPX-HDMI-CSRX receivers for each output to reach up to 40 displays.

The system enables the distribution of Full HD (1080p) video as far as 130 feet (40 m) and 720p/1080i video up to 200 feet (60 m) over each link. Or you can daisychain up to 10 receivers to reach a total distance of up to 2000 feet (600 m)!

The transmitter provides unaltered and uncompressed digital transmission. HDCP compliant, MediaCento HX supports single-link, 225-MHz (6.75-Gbps) bandwidth for sharp, full-motion rendering; synchronized video and audio with no perceivable delay; and Deep

Color resolutions for enhanced color depth and refresh rates. Plus, it supports 7.1-channel surround sound.

MediaCento HX is great for:

- Multimedia and broadcast studios.
- Medical imaging video distribution.
- Sharing video with classrooms in schools.
- Retail PoS and PoP signage deployments.

To monitor video locally, simply plug a display into the local HDMI port. Or use that port to cascade to another transmitter for additional HDMI output. (A cascable receiver is also available.)

Item	Code	List Price
MediaCento HX 1 x 4 Transmitter	VSPX-HDMI1X4-TX	<b>\$549.95</b>
<b>Also order a receiver for each remote screen:</b>		
MediaCento HX Receiver		
Standard	VSPX-HDMI-RX	<b>\$149.95</b>
Cascable	VSPX-HDMI-CSRX	<b>\$289.95</b>

*NOTE: Maximum distance depends on the quality of the cable and type of source and display. For full specifications, see [blackbox.com](http://blackbox.com).*

For multicast video extension, ServSwitch Agility, pp. 10–11.

Learn more at [blackbox.com/go/MediaCento](http://blackbox.com/go/MediaCento).



## DVI-D Splitters with Audio and HDCP

Broadcast HD video—even HDCP content—to two, four, or eight displays.

- Enable you to put digital video content in front of more customers and users.
- Accurately duplicate DVI-D video without attenuation and distortion.
- Fully HDCP compliant for showing Blu-ray player content.
- 19" rackmountable (8-port only).
- ♦♦ **WARRANTY** — 1 Year

These affordably priced splitters enable you to accurately duplicate one HD video and stereo input for output to multiple screens.

You get accurate and reliable video output without signal distortion and attenuation, supporting display resolutions of up to Full HD (1920 x 1080) as well as WUXGA (1920 x 1200) and UXGA (1600 x 1200).

And because they're fully HDCP compliant, you can use them to distribute multimedia content from a Blu-ray player or other HDCP-protected source.

Plus, the splitters can be used with the newest EDID-capable screens. It obtains EDID data from the connected displays so your source device's video card is optimized for displaying video on those screens.

Just connect the source device and screens, power up the splitter, and it's ready to duplicate source video on those displays. To broadcast to additional screens from the same player or other source, order multiple splitters and connect them together via cascaded ports.

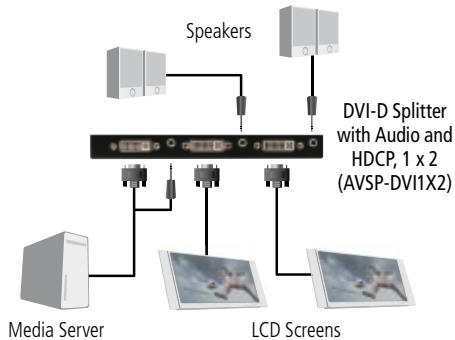
You can also use the splitters with HDMI® compatible devices. Just order an adapter for each DVI port on your splitter.



AVSP-DVI1X2



AVSP-DVI1X4



Item	Code	List Price
DVI-D Splitter with Audio and HDCP		
1 x 2	AVSP-DVI1X2	<b>\$149.95</b>
1 x 4	AVSP-DVI1X4	<b>\$249.95</b>
1 x 8	AVSP-DVI1X8	<b>\$449.95</b>

♦ 1x8 model includes rackmount kit.

### You may also need...

Digital Visual Interface (DVI) Cable, DVI-D Male, Straight Hood/DVI-D Male, Straight Hood		
6-ft. (1.8-m)	EVNDVI02-0006	<b>\$37.95</b>
10-ft. (3.0-m)	EVNDVI02-0010	<b>\$48.95</b>
4-Port Rackmount Kit	AVSP-RMK	<b>\$14.99</b>

## Video to VGA Portable

Get Component, S-Video, and Composite video on your VGA monitor today.

- Enables you to display video from any Component, S-Video, or Composite source on any VGA monitor.
- Equipped with Component, S-Video, Composite, and VGA (PC passthrough) inputs.
- Now supports 1920 x 1080 resolution output for high-quality images.
- ♦♦ **WARRANTY** — 1 Year



Item	Code	List Price
Video to VGA Portable	AC328A-R4	<b>\$160.00</b>



3G-SDI/HD-SDI to HDMI Converter

A low-cost way to use a standard HDMI screen instead of a pricey SDI display for SDI monitoring.

- Converts serial digital interface video for output to an HDMI® display.
- Supports 3G-SDI (3 Gbps), HD-SDI, and SD-SDI input on coax BNC.
- For adding an HDMI screen to a high-end broadcasting or AV application.
- ♦♦ **WARRANTY** — 1 Year

This handy converter enables you to connect a 3G-SDI, an HD-SDI, or an SD-SDI source for output on an HDMI display. This way, you can repurpose an ordinary LCD for video monitoring in your SDI setup.

The converter provides digitally pure SDI-to-HDMI conversion, ensuring no loss in the conversion for both video and audio signaling.

Use it in a TV or an AV application where you need to show uncompressed digital video from professional video equipment on a consumer-grade HDTV.

Even better, it features SDI loopout via a second coax connector. This way, you can display a 3G-SDI signal from a camera on an HDMI panel while simultaneously outputting the 3G-SDI signal to a second SDI device for local monitoring. Or use the loopout to daisychain to additional SDI equipment.

For both older and newer SDI interfaces, the converter processes bit rates from 270 Mbps up to 2.97 Gbps, and cable equalization helps compensate for loss when connecting at maximum standard distances.



The 3G-SDI/HD-SDI to HDMI Converter processes up to eight channels of audio, including 7.1-channel or 5.1-channel audio in addition to HDMI video.

*NOTE: Distance depends on the characteristics and quality of the cable and the type of SDI source. Cable equalization supports maximum distances of 300 feet (90 m) for 3G-SDI; 500 feet (150 m) for HD-SDI; and 1000 feet (300 m) for SD-SDI.*

Item	Code	List Price
3G-SDI/HD-SDI to HDMI Converter	VSC-SDI-HDMI	\$449.99

VGA/DVI to DVI-D Converter

Easily convert and scale VGA or DVI for output to a DVI-D screen.

- Converts and scales analog VGA video for DVI-D display.
- Ideal for studios or other applications with a mix of analog and digital video equipment.
- Automatically detects all known VGA resolutions up to 1920 x 1200.
- Scales the VGA source signal, as well as DVI input, to a selectable size.
- ♦♦ **WARRANTY** — 2 Years



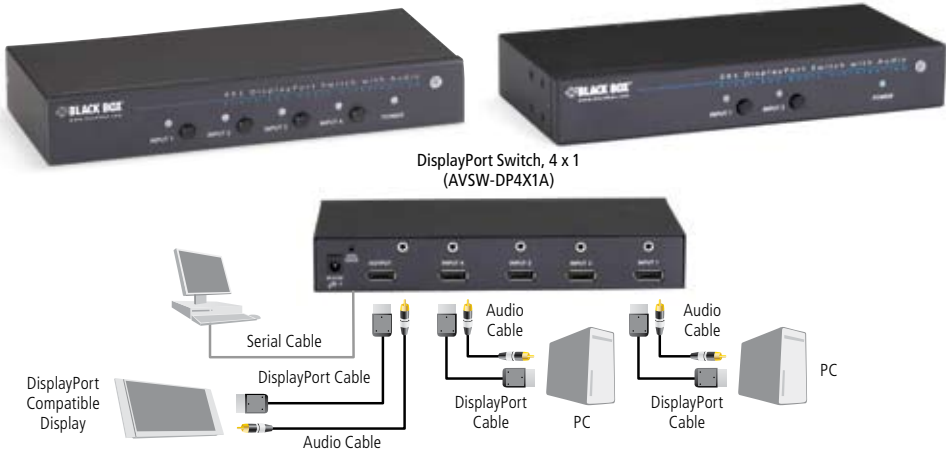
Item	Code	List Price
VGA/DVI to DVI-D Converter	ACS411A-R2	\$1145.00

♦ Includes (1) converter, (1) VGA cable, (1) power supply, and (1) user manual.



DisplayPort Switches

Switch two or four DisplayPort sources to a single DisplayPort display.



- Switch between two or four DisplayPort sources for output on a high-resolution DisplayPort display.
- Support HD resolutions up to 1080p.
- Plug and play. No software required for operation.
- Support both audio and video simultaneously.
- DisplayPort Switches with Serial and 3.5-mm

Audio also support serial switching control.

- ♦♦ **WARRANTY** — 1 Year

Item	Code	List Price
DisplayPort Switch		
2 x 1	AVSW-DP2X1	<b>\$89.95</b>
DisplayPort Switch with Serial Control and 3.5-mm Audio		
2 x 1	AVSW-DP2X1A	<b>\$139.95</b>
4 x 1	AVSW-DP4X1A	<b>\$199.95</b>

VGA Switches with Serial and 3.5-mm Audio

Switch between four or eight VGA sources for output on a single HD display or projector.



AVSW-VGA4X1A

- Route video plus audio from multiple sources to a single display.
- Provide high-resolution output, up to 1920 x 1200 and 1920 x 1440 VGA resolutions, as well as Full HD 1080p (1920 x 1080).
- Ideal for meeting rooms, classrooms, and digital signage applications — anywhere you need to route both video and audio from multiple PC sources to a common display.

- Support serial switching control function plus IR control passthrough.
- ♦♦ **WARRANTY** — 1 Year

Item	Code	List Price
VGA Switches with Serial and 3.5-mm Audio		
4 x 1	AVSW-VGA4X1A	<b>\$195.95</b>
8 x 1	AVSW-VGA8X1A	<b>\$295.95</b>

ServSwitch DKM: More switching options, more extension options, DVI-D support.

Learn more, see pages 4–7 or go to [blackbox.com/go/DKM](https://blackbox.com/go/DKM)



## Micro Wireless VGA Presentation Tool

Enhance meeting collaboration. Plug this compact device into a display for easy presentation sharing.

- Wirelessly project laptop video from where you sit—up to 300 feet (91.4 m) away.
- Ideal for large meeting rooms.
- Displays video from up to four users at once.
- Easy to set up and use.
- ♦♦ **WARRANTY** — 1 Year



Simplify presentation sharing during meetings. The Micro Wireless VGA Presentation Tool plugs into any display or projector with a VGA port, enabling laptop or other Wi-Fi users to log in and display video wirelessly. It supports multiple users and can display up to four at the same time in quad-screen mode.

And because it also works as a wireless access point for clients, you can configure it to communicate with existing wireless access points on your network to access the Internet or a LAN.

Item	Code	List Price
Micro Wireless VGA Presentation Tool	AVX-VGA-WI	<b>\$179.00</b>

## Wireless Video Presentation System

- Turns a wired projector into a high-end wireless projector.
- Professional-grade features, including support for up to 254 users in large meetings.
- Supports 4-to-1 split-screen projection.
- Advanced gatekeeper control for many users.



**watch  
THE VIDEO**

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Learn more at [blackbox.com/go/VPS](http://blackbox.com/go/VPS)



## MediaFlyer EXPRESS Hosted Digital Signage

# The affordable, easy way to create professional

- Get impressive signage with little upfront investment and minimal IT or creative skills.
- Advertise and improve communications to get an edge on your competition.
- No design software to load. Control all content via a browser connection.
- Choose from pre-defined screen layouts or make your own.
- Makes it easy to load images and video, and benefit from social media.
- ♦♦ **WARRANTY** — 1 Year

### The subscription-based signage solution.

MediaFlyer™ EXPRESS provides ample functionality and satisfies a range of needs, whether you just want to show slideshows and Twitter feeds on one screen or if you need to support multiple players at multiple sites.

This simple-to-implement digital signage platform turns any user—the average office manager, business owner, or a system integrator—into a multimedia pro.

Loaded with features, MediaFlyer EXPRESS enables you to play many kinds of content, manage it from a network, and automate content playing for 24/7 viewer engagement.

It's ideal for business lobbies, doctor's offices, bars and restaurants, retail stores, schools, and virtually any location with Internet access.

And, unlike many other competing services, MediaFlyer EXPRESS keeps its player(s) continuously connected to its Web-based service, so content updates occur almost instantaneously. You can quickly correct any errors or put up a special promo to take advantage of an immediate opportunity.

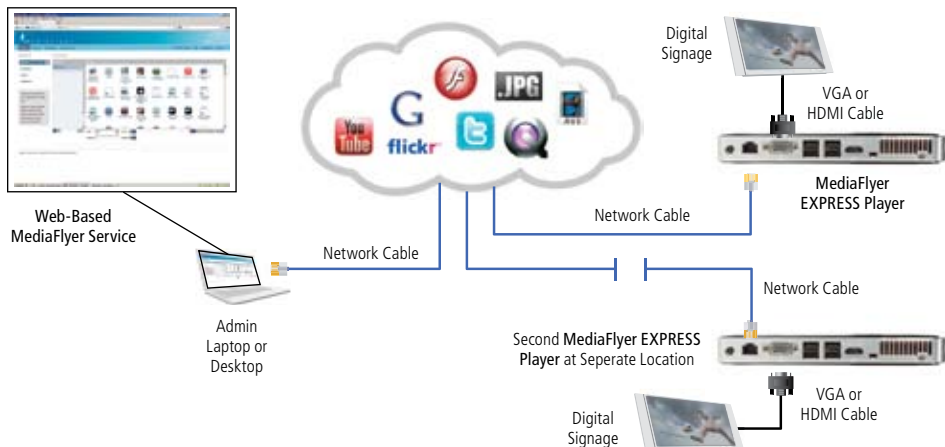


### Your content displayed in 20 minutes!

MediaFlyer EXPRESS gives you all the features and functions you need to set up your signage. All you need is the screen. It combines a hosted Web service, player, and all the cables you need with a drag-and-drop interface, so everything falls into place. In little time, you'll have a display that attracts customer attention.

Store and play many types of content: Flash® files, PowerPoint® slideshows, live text, RSS news feeds, or any mixture of these in a layout of your design. The system uses a playlist, just like any other digital signage player, and the playlist loops back to the beginning when it's done. Don't want to be bothered with playlists? Then just set it up to run "mashups," with the system randomly displaying a mix of media on the screen.

### MediaFlyer EXPRESS architecture



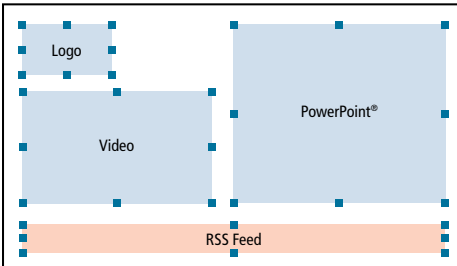


# digital signage in-house.



## Where it fits in our digital signage line:

- Ideal for businesses with minimal creative or IT networking expertise.
- No publisher hardware to manage and secure; everything's done via a Web site interface.
- For users who don't need advanced scheduling.



Save time by using one of the preloaded, predefined layouts, or you can create your own using the intuitive layout tool. It enables you to divide a display into two or more areas and create a ticker or text crawl in a zone at the bottom. Add as many zones as you like, move them around, make them larger or wider.

For content placement, you can expand or contract an image until it fits within the pixels available. Or you can expand and crop the image to fit the screen or scale it horizontally and vertically so it fills the screen.

Plus, as an option, the system supports HTTP-based API programming for interfacing with SharePoint® and other data sources.

## Other capabilities and features

- Can be accessed by anybody that you authorize—great for sharing tasks.
- Easy to scale from one screen to many screens.
- Assign content to one player or many players.
- Browser interface supports Java, PHP, ASP, CSS3, and HTML5.
- Compact, VESA-mountable player supports Gigabit speeds and wireless connectivity.
- Up to 1920 x 1200 resolutions and 24-bit color.
- Plays Flash®, PowerPoint®, MPEG 4 (.mp4, .m4v, or .mpg), QuickTime® (H.264 .mov), Windows® Media (.wmv), Ogg (.ogg), and RSS feeds.
- Displays GIF, TIFF, JPEG, BMP, and PNG still images, PDF, HTML, and calendar formats.
- Caches content locally on the player.
- Diagnostic screen for easy troubleshooting.
- Social media integration.

Item	Code	List Price
MediaFlyer EXPRESS Hosted Digital Signage Platform		
1-Year Starter Kit	MFly-X01	<b>\$1099.95</b>
3-Year Starter Kit	MFly-X03	<b>\$1299.95</b>
1-Year Subscription Renewal	MFly-X01RE	<b>\$249.95</b>
3-Year Subscription Renewal	MFly-X03RE	<b>\$549.95</b>

Learn more at [blackbox.com/go/MediaFlyer](http://blackbox.com/go/MediaFlyer)



## iCOMPEL Digital Signage Platform for SMB

# Set up impressive digital displays easily and affordably with the award-winning iCOMPEL.

- A plug-and-display solution—sets up *FAST* with all software preinstalled and tested.
- FREE updates and no ongoing subscription or licensing fees for a lower cost of ownership.
- Scalable. Use standalone with one screen or networked for multiple screens.
- Enables you to customize screens with a mix of zones showing still images, text, HTML, RSS and XML feeds, as well as multiple videos shown side by side!
- ♦♦ **WARRANTY** — 1 Year

Deliver the right message at the right time for maximum results using iCOMPEL. Ideal for small and medium-size (SMB) installations, iCOMPEL appliances and players work right out of the box for quick setup.

Install iCOMPEL units on a network and manage them via a browser from any PC or Mac® on a LAN or WAN. One iCOMPEL publisher can send media over the network to an iCOMPEL subscriber in another office.

### Easy to get started.

Connect the iCOMPEL to your network and to a display device, power it up, and once it has an IP address from the network, you can use a browser to access the appliance via a DHCP server. Fixed IP addresses can also be set.

To upload media, drag and drop from your computer desktop or folder to the iCOMPEL media folders on the appliance's hard disk or use the user interface to browse for files.

### Powerful signage presentation creation.

The preloaded software includes a large number of free professionally designed layouts, so you can display your content in a nicely laid-out screen within minutes.

Or you can create your own. The intuitive interface makes it easy. Resize, position, and layer zones with a click and drag, or manually set zone measurements for precise alignment.

### Extensive media format support.

iCOMPEL supports many formats, so you can combine video with scrolling text, photos, Flash, and Web content. In addition to HTML and RSS media, it handles MPEG, AVI, QuickTime®, and PowerPoint® movies, JPEG, GIF, and TIFF images; and WAV and MP3 audio.

## Buyers' Checklist

- ✓ Do you want a live TV feed?
- ✓ Want to stream IPTV content through players on your network?
- ✓ Need to fast forward or toggle between presentations and control volume at the screen?
- ✓ Need to stream content to a subscriber unit wirelessly?
- ✓ Do you need your signage to be interactive for touch?



*Includes FREE layouts. Customize them how you like!*





Front view: iCOMP

### Where it fits in our digital signage line:

- Integrated hardware/software publisher with various subscriber unit options.
- The go-to platform for most applications.
- Use on a network or connect directly to screen.
- Includes option for set-top box connections.

### Ideal for small and medium businesses.

With iCOMPEL, you can easily stream messaging to screens in a lobby or other area to strengthen communications. Because it's compatible with various media—including HTML and other content you likely already have on hand—you won't have to reformat a lot of existing media for uploading to your signage system.

Stream in a text crawl alerting visitors to important announcements, display local weather via an XML feed, or provide the latest news headlines via RSS feeds. They're all easy to set up using the iCOMPEL interface.

For iCOMPEL business case studies, go to: [blackbox.com/go/CS](http://blackbox.com/go/CS).



### Loaded with tools for...

- Drag-and-drop layout and zone manipulation.
- Automating distribution, setting up channels to deliver different content on different screens.
- Scheduling layouts to play at different times.
- Giving every zone in a layout its own playlist.
- Monitoring remotely over an IP network.
- Linking to external info, such as Web content.
- Linking to internal info for local content updates.
- Pulling down content from an FTP file server.
- Updating messages locally at the screen.
- Interrupting playback for emergency alerts.
- Streaming HTML content from a Web server.
- Using the iCOMPEL itself as a content server.
- Triggering content by GPIO input signals.
- Importing and customizing fonts.
- Troubleshooting digital signage.
- Securing access.
- System monitoring.

In some cases, a single iCOMPEL unit is all you'll need. Call us at 800-355-8003 to discuss your specific needs.

iCOMPEL HD Subscriber Units  
**Starting at Price \$1595.95**

iCOMPEL HD Appliances  
**Starting at \$2195.95**



Learn more at [blackbox.com/go/iCOMPEL](http://blackbox.com/go/iCOMPEL)

Video, iCOMPEL Software Demo.



## iCOMPEL EDS for the Enterprise

# Deliver content globally with this easy-to-scale

- More features and fewer headaches than similarly priced enterprise solutions.
- Segmented group player control. Great for large, geographically diverse networks.
- Simplified browser-based playlist and content management control.
- Global time zone support for playout at correct local times.
- ♦♦ **WARRANTY** — 1 Year

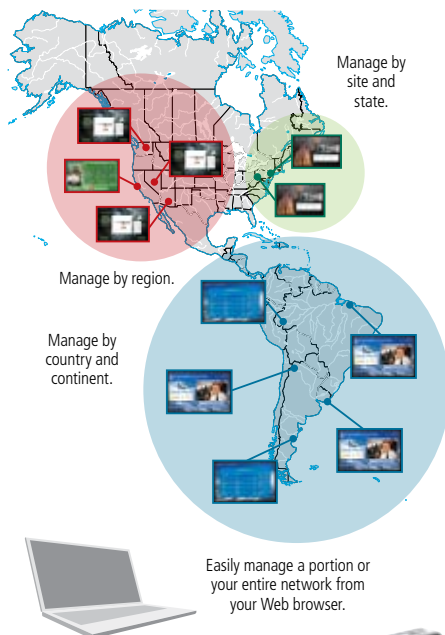
iCOMPEL EDS™ provides total control and visibility of content at the corporate or agency level. It gives you an easy way to supply professional-caliber content to large signage networks as well as remotely located networks.

It's provided as a VMware® server application, ideal for virtualized environments, and with no recurring licensing fees, iCOMPEL EDS features low ownership costs.

Update content from anywhere you have an Internet connection to change presentations, customize messaging for audiences, issue alerts, and more. What's more, it gives you the ability to fully leverage the revenue-generating potential of your ad networks.

iCOMPEL EDS supports many media formats, so you can combine video with scrolling text, photos, Flash, Web content, and more. It accepts streaming video, and touchscreen interactivity is included.

Scaling to a distributed, multichannel network with many screens in many sites is simply a matter of adding more iCOMPEL EDS Subscribers to your iCOMPEL EDS configuration.



*The iCOMPEL EDS Subscriber, (right) is responsible for putting signage on your screen(s). By simply connecting video, Ethernet, and power to it, you can have a screen up and running.*



*NOTE: Please speak to us about recommended system requirements for your intended application.*

## iCOMPEL WDS Wearable Digital Signage

Engage, promote, and get sweet results with video shown on 2.4" screens!

- Communicate without spoken words.
- Great for trade shows, retail, hospitality, restaurants, and sales calls in the field.
- Use players on their own or integrated with the iCOMPEL EDS (above) for global content control of many players.
- ♦♦ **WARRANTY** — 1 Year

**iCOMPEL™ WDS**  
WEARABLE DIGITAL SIGNAGE





# server software solution.



The real power of iCOMPEL EDS is in its software. It not only gives you an intuitive way to schedule playout and group players, it also provides a palette for resizing and cropping images on the fly. Position and layer zones with a click and drag, or set pixel-exact positioning.

**Where it fits in our digital signage line:**

- For growing signage enterprises.
- No publisher hardware; virtual server software.
- For ad networks requiring playout verification.



Grid-based screen editing interface (left); composer tool (right).



Plus, it features a unique composer tool to create eye-catching special effects without working in Flash. Easily create:

- page transitions.
- object animations.
- image reflection and shadowing.
- rounded corners on objects.
- transparent layers, background colors, and more!

To test drive the software, call **724-873-6565** today.

Item	Code	List Price
<b>First, order your VMware® server application...</b>		
iCOMPEL EDS Manager Software License	EDS-M	<b>Call today!</b>
<b>...then, for each screen, order a subscriber,</b>		
iCOMPEL EDS Subscriber with Software License	EDS-SS10	<b>Call today!</b>
♦ Includes (1) subscriber unit, (1) HDMI cable, (1) Ethernet patch cable, (1) vertical chassis stand, (1) VESA mount, and (1) power supply.		
<b>To add wearable signage, order for each user...</b>		
iCOMPEL WDS Player for EDS or MSM (for details, see below.)	WDS-M	<b>\$119.95</b>

Learn more at [blackbox.com/go/iCOMPEL-EDS](http://blackbox.com/go/iCOMPEL-EDS)

Think small for big results. Delivering video messaging through screens no bigger than a business card, iCOMPEL™ WDS enables you to reach customers in an unobstructed way.

It includes access to a Web site for uploading media. Just compile text, images, Flash, and video into a slideshow using our Composer editor; then add transitions, effects, and durations; and load presentations onto a player.

Item	Code	List Price
<b>Order a player for each user on your team...</b>		
iCOMPEL WDS Player for msm.blackbox.com	WDS-H	<b>\$139.95</b>
♦ Includes (1) player, (1) year of hosting, (1) magnetic clip for fastening to clothing, (1) lanyard holder, (1) mini-USB cable for updates/recharging, (1) CD with MSM Client tool, and (1) AC charger.		
<b>To add WDS to iCOMPEL EDS, see above.</b>		
<i>NOTE: For on-premises management, ask about our manager appliance (EDS-MSM).</i>		

Learn more at [blackbox.com/go/WDS](http://blackbox.com/go/WDS)



## 62.5-Micron Bulk Fiber Cable

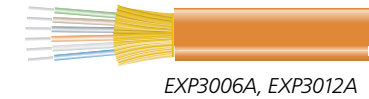
Tight-buffered cable for long runs, indoors and outdoors.

FREE

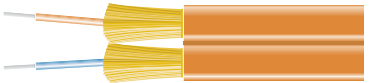
ground shipping on orders over \$250.

See page 2.

- Save money and order cable cut to the exact lengths you need.
- Ideal for backbone and campus connections.
- Run the plenum-jacketed Aluminum Interlocking Armored Cable anywhere in your building—no ducts required.
- Pull the Indoor/Outdoor Cable anywhere—between and within buildings. Meets GR-20-CORE water penetration requirements.



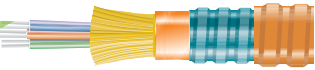
EXP3006A, EXP3012A



EXN0625A, EXP0625A

Item	Code	List Price
62.5-Micron Bulk Fiber Cable		
Tight Buffered Cut-to-Length, Plenum		
6-Strand	EXP3006A	<b>\$.98/ft.</b>
12-Strand	EXP3012A	<b>\$1.65/ft.</b>
Zipcord, Cut-to-Length		
PVC	EXN0625A	<b>\$.37/ft.</b>
Plenum	EXP0625A	<b>\$.42/ft.</b>
Interlocking Armored, 12-Strand, Plenum, OFCP		
	EXPIA3012A	<b>\$4.12/ft.</b>
Indoor/Outdoor, 12-Strand, Plenum, OFNP		
	EXP103012A	<b>\$1.85/ft.</b>

save 28% or more!



Save 28% or more on installation. Run this armored cable anywhere in your building—no ducts required.

EXPIA3012A



EXP103012A

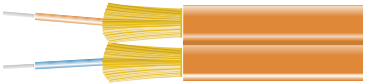
## 50-Micron Bulk Fiber Cable

Tight-buffered cable for long 50-micron runs.

- Save money and order cable cut to the exact lengths you need.
- Ideal for backbone and campus connections.
- Run the plenum-jacketed Aluminum Interlocking Armored Cable anywhere in your building—no ducts required.
- Pull the Indoor/Outdoor Cable anywhere—between and within buildings. Meets GR-20-CORE water penetration requirements.



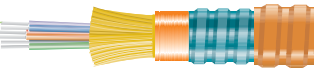
EXP35006A, EXP35012A



EXP050A

Item	Code	List Price
50-Micron Bulk Fiber Cable		
Tight Buffered Cut-to-Length, Plenum		
6-Strand	EXP35006A	<b>\$.98/ft.</b>
12-Strand	EXP35012A	<b>\$1.65/ft.</b>
Zipcord, Cut-to-Length		
Plenum	EXP050A	<b>\$.46/ft.</b>
Interlocking Armored, 12-Strand, Plenum, OFCP		
	EXPIA35012A	<b>\$3.99/ft.</b>
Indoor/Outdoor, 12-Strand, Plenum, OFNP		
	EXP1035012A	<b>\$2.18/ft.</b>

save 28% or more!



Save 28% or more on installation. Run this armored cable anywhere in your building—no ducts required.

EXPIA35012A



EXP1035012A



## Laser-Optimized OM3 10-GbE 50-Micron Cut-to-Length Fiber

The right choice for SANs and 10-GbE.

- Save money and order tight-buffered cable cut to the exact lengths you need.
- Ideal for backbone and campus connections.
- Run the plenum-jacketed Aluminum Interlocking Armored Cable anywhere in your building—no ducts required.
- Choose from bulk, armored bulk, zipcord, and patch cable (pp. 32–33).



**save 28% or more!**

Save 28% or more on installation. Run this armored cable anywhere in your building—no ducts required.

EXPIA10G12A

Item	Code	List Price
10-GbE OM3 50-Micron Bulk Fiber Optic Cable		
Interlocking Armored, Tight-Buffered, Plenum, OFCP 12-Strand	EXPIA10G12A	<b>\$4.12/ft.</b>
Distribution-Style, Tight-Buffered, Plenum, OFNP 12-Strand*	EXP10G012A	<b>\$1.75/ft.</b>
Zipcord, 2-Strand PVC, OFNR	EXN10000A	<b>\$ .41/ft.</b>

\* Many other fiber counts are available with PVC and plenum jackets.



EXP10G012A



EXN10000A

## Single-Mode Cut-to-Length Fiber

With infinite bandwidth, go to 10-GbE and beyond.

- Run the plenum-jacketed Aluminum Interlocking Armored Cable anywhere in your building—no ducts required.
- The Armored Loose-Tube Outside-Plant cable features steel armor, Kevlar® strength members, and a medium-density PVC jacket.
- Use Loose-Tube Outside-Plant Cable with an outdoor-rated MDPE jacket to go from building to building.

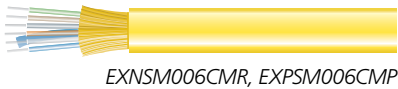


**save 40% or more!**

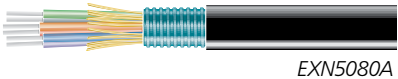
Save 40% or more on installation. Run this armored cable anywhere in your building—no ducts required.

EXPIASM12A

Item	Code	List Price
Single-Mode, 9-Micron Bulk Fiber Optic Cable		
Interlocking Armored, Tight-Buffered, Plenum, OFCP 12-Strand	EXPIASM12A	<b>\$3.30/ft.</b>
Distribution-Style, Tight-Buffered PVC 6-Strand	EXNSM006CMR	<b>\$ .47/ft.</b>
12-Strand	EXNSM012CMR	<b>\$ .55/ft.</b>
Plenum 6-Strand	EXPSM006CMP	<b>\$ .55/ft.</b>
12-Strand	EXPSM012CMP	<b>\$ .79/ft.</b>
Armored Loose-Tube Outside-Plant 24-Strand	EXN5080A	<b>\$1.29/ft.</b>
Loose-Tube Outside-Plant 24-Strand	EXN5080NA	<b>\$ .79/ft.</b>



EXNSM006CMR, EXPSM006CMP



EXN5080A

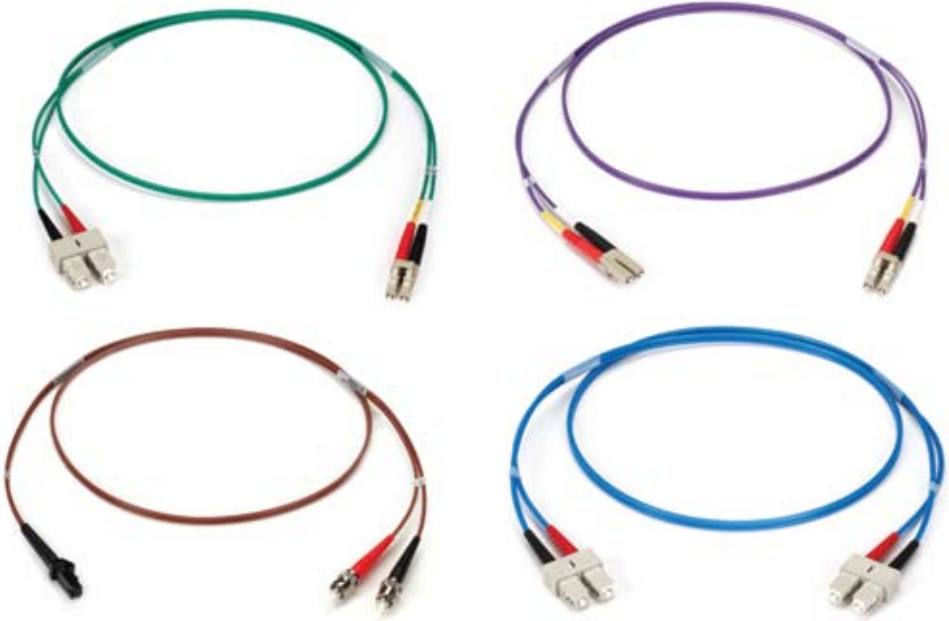


EXN5080NA



Multicolor Fiber Optic Patch Cables

Get fiber patch cables in 12 colors without the



- Match Black Box fiber cable to your company, team, or school colors for that special networking application in the data center and the desktop.
- Ideal for color-coded applications, departments, security levels and more.
- It's easy to build your own cable. See the chart on the next page.

Choose from as many as 12 colors!



TECH SPECS

**Bandwidth** — 62.5-µm:  
Intermediate performance EMB:  
850 nm: 220 MHz/km;  
Legacy performance EMB:  
850 nm: 200 MHz/km;  
1300 nm: 500 MHz/km;  
50-µm: Intermediate  
performance EMB: 850 nm:  
510 MHz/km;  
Legacy performance EMB:  
850 nm: 500 MHz/km;  
1300 nm: 500 MHz/km;  
10-GbE 50-µm: EMB:  
850 nm: 2000 MHz/km;  
Legacy performance EMB:  
850 nm: 1500 MHz/km;  
1300 nm: 500 MHz/km  
**Optimized Data Rate** — 62.5-µm:  
850 nm: 1 Gbps over 300 m;  
1300 nm: 1 Gbps over 550 m;  
50-µm: 1 Gbps over 600 m  
**RoHS** — Yes

Buyers' Checklist

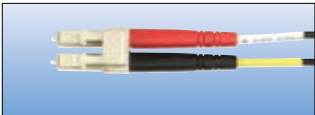
- ✓ Core: 62.5-micron multimode, 50-micron multimode, 10-GbE laser-optimized 50-micron multimode, or 9-micron single-mode.
- ✓ Length: 13 lengths are available ranging from 1 to 30 meters.
- ✓ Four connectors: ST, SC, LC, and MT-RJ in 10 different combinations.
- ✓ 12 colors: Match cables to your favorite team, company, or school colors.



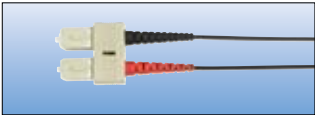
hassle of placing a custom order.



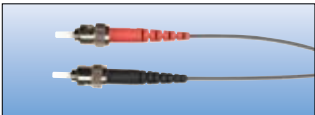
MT-RJ connector



LC connector



SC connector



ST connector

Item	Code
Multicolor Fiber Optic Patch Cables	See chart below.
To order, call Customer Service at 724-746-5500 or type in your specific product code at <a href="https://blackbox.com/go/ColorFiber">blackbox.com/go/ColorFiber</a> .	

Quick Facts

Buyer's Guide Multicolor Fiber Optic Patch Cables

NOTE: If you wish to order a cable with a length other than those specified here, such as 12 feet, please call Customer Service at 724-746-5500.

1 (Constant)	2 Jacket	3 Core Size	4 Length*	5 Connectors	6 Color
FO	CMR (PVC)	62- (62.5 Micron)	001M- (1 Meter)	STST- (ST to ST)	BL (Blue)
	CMP (Plenum)	50- (50 Micron)	002M- (2 Meters)	SCSC- (SC to SC)	OR (Orange)
		10- (10-GbE OM3 Laser Optimized 50 Micron)	003M- (3 Meters)	LCLC- (LC to LC)	GN (Green)
		SM- (Single-Mode)	004M- (4 Meters)	MTMT- (MT-RJ to MT-RJ)	BR (Brown)
			005M- (5 Meters)	STSC- (ST to SC)	GR (Gray)
			006M- (6 Meters)	STLC- (ST to LC)	WH (White)
Examples of fiber optic cable codes:			007M- (7 Meters)	STMT- (ST to MT-RJ)	RD (Red)
			008M- (8 Meters)	SCLC- (SC to LC)	BK (Black)
			010M- (10 Meters)	LCMT- (LC to MT-RJ)	YL (Yellow)
			015M- (15 Meters)	SCMT- (SC to MT-RJ)	VT (Violet)
			020M- (20 Meters)		PK (Pink)
			025M- (25 Meters)		AQ (Aqua)
			030M- (30 Meters)		

Learn more at [blackbox.com/go/ColorFiber](https://blackbox.com/go/ColorFiber)



**e Black Box Explains**

**The MPO connector.**

MPO stands for multifiber push-on connector. It is defined by IEC-61754-7 and EIA/TIA-604-5-D, also known as FOCIS 5. The MPO connector, combined with lightweight multifiber ribbon cable, represents a huge technological advance over traditional multifiber cables. It's lighter, more compact, easier to install, and less expensive.

A single MPO connector replaces up to 24 standard connectors. This very high density means lower space requirements and reduced costs for your installation. Traditional, tight-buffered multifiber cable needs to have each fiber individually terminated by a skilled technician. But MPO fiber optic cable, which carries multiple fibers, comes preterminated.




**Just plug it in and you're ready to go.**

MPO connectors feature an intuitive push-pull latching sleeve mechanism with an audible click upon connection and are easy to use. The MPO connector is similar to the MT-RJ connector. The MPO's ferrule surface of 2.45 x 6.40 mm is slightly bigger than the MT-RJ's, and the latching mechanism works with a sliding sleeve latch rather than a push-in latch.

MPO connectors are also commonly called MTP® connectors, which is a registered trademark of US Conec. The MTP connector is an MPO connector.

**MPO Fiber Cassettes and Cable, 50-Micron, OM3, 10-GbE**

Add 10-GbE modular connectivity to your data center.



**ABSOLUTELY  
GUARANTEED  
FOR LIFE**

MTPCS-SC-10G

MTPCS-LC-10G




Item	Code	List Price
MPO Fiber Optic Cassette, 10-GbE, 12-Strand, OM3		
LC	MTPCS-LC-10G	\$239.95
SC	MTPCS-SC-10G	\$214.95

- Break out one 12-fiber MPO cable into six duplex SC or LC connectors.
- Pre-terminated cassettes feature one MPO connector on the back and six connectors on the front.
- Cassettes fit all the Black Box fiber enclosures on these two pages.

10-GbE MPO/MPO Fiber Optic Ribbon Cable, OM3, 50-Micron, 12-Strand, Aqua		
5-m (16.4-ft.)	MTP-MTP-005M-10G	\$157.95
10-m (32.8-ft.)	MTP-MTP-010M-10G	\$228.95
15-m (49.2-ft.)	MTP-MTP-015M-10G	\$299.95
20-m (65.6-ft.)	MTP-MTP-020M-10G	\$371.95
30-m (98.4-ft.)	MTP-MTP-030M-10G	\$449.95
50-m (164-ft.)	MTP-MTP-050M-10G	\$695.95

**Adapter Panels**

Adapters snap into fiber enclosures.



**ABSOLUTELY  
GUARANTEED  
FOR LIFE**

JPM411A-R2

JPM420A

JPM404A-R2

Item	Code	List Price
Standard Adapter Panels, Duplex Fiber		
(3) ST Pairs	JPM404A-R2	\$24.95
(3) SC Pairs	JPM405A-R2	\$27.95
(6) MT-RJ Pairs	JPM409A-R2	\$32.95
(6) LC Pairs	JPM410A-R2	\$44.95
HD Fiber Adapter Panels, 1U		
(4) ST Pairs	JPM411A-R2	\$26.95
(6) SC Duplex Pairs, Blue*	JPM412A-R2	\$32.95
(6) SC Duplex Pairs, Gray	JPM420A	\$32.95
(6) SC Duplex Pairs, Beige	JPM421A	\$32.95
(6) ST/(6) SC Pairs	JPM415A-R2	\$32.95
(8) MT-RJ Pairs	JPM416A-R2	\$32.95
(12) LC Pairs	JPM422A	\$129.95

\*Yellow and orange are also available.



### Fiber Wall Cabinets

Low-profile fiber enclosures for limited-space areas.



### Open-Style Cabinets

- Low-profile cabinets conserve wall space and can be mounted almost anywhere.

### Lock-Style Cabinets

- Separate lockable covers provide access to the users' side and the technician's side.
- Both accept snap in Adapter Panels (facing page) or MPO Fiber Cassettes (facing page).

Item	Code	List Price
Fiber Wall Cabinets		
Open-Style		
2-Adapter Panel	JPM400A-R2	<b>\$102.85</b>
4-Adapter Panel	JPM401A-R2	<b>\$155.95</b>
Lock-Style		
4-Adapter Panel	JPM402A-R2	<b>\$227.95</b>
12-Adapter Panel	JPM403A-R2	<b>\$381.10</b>

### Rackmount Fiber Shelf

Limited rack or cabinet space?  
This 1U enclosure is the solution.

- Splice tray stud enables you to install pigtail splice trays.
- Mount in cabinets and two-post racks.
- Accepts three snap-in Adapter Panels (facing page) and MPO Fiber Cassettes (facing page).



Code	Code	List Price
Rackmount Fiber Shelf		
1U, 3-Adapter Panel	JPM407A-R4	<b>\$258.95</b>

### NEMA-4 Rated Fiber Panels

Protect your fiber terminations in damp environments and below ground floors.

- Two or four watertight cable openings prevent condensation and moisture from entering.
- Hold two or four Adapter Panels (facing page) and MPO Fiber Cassettes (facing page).



Item	Code	List Price
NEMA-4 Rated Fiber Panels		
2-Port	JPM4001A	<b>\$295.95</b>
4-Port	JPM4000A	<b>\$312.95</b>

### Economy Fiber Patch Panels

Customize these guaranteed-for-life panels to your specific applications.

- Supports custom configurations with fiber and copper jacks.
- Blank Panels hold three standard or HD Fiber Adapter Panels (facing page), or pre-terminated MPO Cassettes (facing page).



Item	Code	List Price
Economy Fiber Patch Panels, 1U, 19"		
ST 16 Simplex Adapters	JPM395A	<b>\$95.95</b>
24 Simplex Adapters	JPM425A	<b>\$110.95</b>
SC 16 Simplex Adapters	JPM430A	<b>\$112.95</b>
LC 16 Simplex Adapters	JPM390A	<b>\$170.95</b>
Blank 3-Adapter Fiber Panel		
	JPMT-FIBER-3	<b>\$29.35</b>



CAT6A Solid Bulk Cable (UTP)

Make the move to 10-GbE with this 600-MHz cable.



- Supports 10-GbE up to 328 feet (100 m).
- Ideal for server-to-server, server-to-storage, and server-to-switch connections.
- Use also for distributed backbone, 10-GbE-to-desktop, and active-zone cabling applications.
- Supports PoE and PoE+ for VoIP, WAP, and security applications.



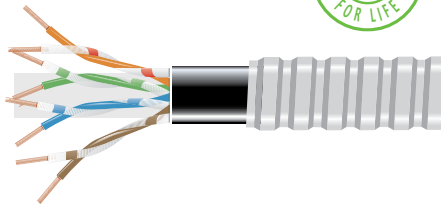
Item	Code	List Price
CAT6A Solid Bulk Cable (UTP), Blue 1000-ft. (304.8-m)		
Riser PVC	C6AU-R-SLD-BL	\$324.95
Plenum	C6AU-P-SLD-BL	\$669.95

GigaTrue® Plus CAT6 Heavy-Duty, Armored Indoor Cable

Save money! Run this armored cable anywhere in your building—no innerducts required.



- Save money on labor and materials. Pull this cable once instead of pulling conduit and then pulling cable.
- Aluminum armor also acts like a shield.
- Ideal for out-of-the-way areas and harsh and industrial environments.
- Well-suited for military, aerospace, energy, and manufacturing applications.
- Proudly made in the USA.



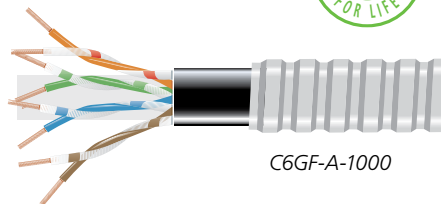
Item	Code	List Price
GigaTrue Pus CAT6 Heavy-Duty, Armored Indoor Cable, PVC, 1000-ft. (304.8-m)		
Black	C6-IA-1000	\$744.95

CAT5e/CAT6 Outdoor-Rated Armored and Non-Armored Cables

Tough cables that resist the elements, crushing, and EMI.



- Use for direct burial, in ducts, or lashed to an aerial support member.
- Aluminum armored version also resists rodent damage.
- Gel-filled, solid-conductor cables feature UV- and abrasion-resistant jackets.
- Withstand extreme temperatures.



C6GF-A-1000

Item	Code	List Price
Heavy-Duty, Outdoor-Rated, Armored, Solid, Gel-Filled Bulk Cable, 1000-ft. (304.8-m)		
CAT5e	C5EGF-A-1000	\$699.95
CAT6	C6GF-A-1000	\$768.95
Outdoor-Rated, Non-Armored, Solid, Gel-Filled Bulk Cable, 1000-ft. (304.8-m)		
CAT5e	C5EGF-NA-1000	\$295.95
CAT6	C6GF-NA-1000	\$329.95



## LockPORT™ Secure Port Locks

Lock up unused network ports from unauthorized access.

- Protect your network and data.
- Help you comply with PCI, HIPAA, and HITECH regulations.
- Ideal for hospitals, financial institutions, casinos, hotels, legal offices, military facilities, schools, and retail.
- Perfect for publicly accessible areas, such as lobbies, conference rooms, airports, coffee shops, and more.
- One Removal Tool (RT-AB-CL) comes with every 25-pack.
- ♦♦ **WARRANTY** — 3 Years

Item	Code	List Price
LockPORT Port Locks, 25-Pack, Includes Removal Tool		
Red	PL-AB-RD-25PAK	\$39.95
Black	PL-AB-BK-25PAK	\$39.95
Extra Port Lock Removal Tool	RT-AB-CL	\$1.95



Learn more at [blackbox.com/go/LockPort](https://blackbox.com/go/LockPort).



**FREE sample!**  
See page 2 for details.

## LockPORT CAT5e, CAT6, and Fiber Locking Patch Cable

Secure ports from unauthorized access and accidental disconnects.



- Prevent unauthorized personnel from disrupting vital network connections.
- Protect publicly accessible connections.
- Choose different lock combinations: secure/secure, secure/key, and key/key.



For absolute security, choose the red Key Lock cable. Its red clip can only be released with the clear Removal Tool.

The green Secure Lock can be removed by anyone and is ideal for preventing accidental disconnects. Port Locks (above) shown in unused ports.

C5UR-, C6UR- FOR-KL, -SL, -SK Series  
**Starting at \$6.45**

## CAT5e and CAT6 EZ-RJ45 Modular Plugs

Make faster terminations and reduce wasted crimps.

- Simple one-piece design eliminates loading bar and liners.
- Verify proper wiring at a glance.
- Choose from unshielded and shielded plugs.



Item	Code	List Price
EZ-RJ45 Modular Plugs, 100 Packs		
CAT5e Unshielded	CAT5EEZ-100PAK	\$62.95
Shielded	CAT5EEZ-100PACK	\$156.95
CAT6 Unshielded	CAT6EZ-100PAK	\$69.95
Shielded	CAT6SEZ-100PACK	\$179.95

Shielded CAT6 Plug  
(CAT6SEZ-100PACK)





888-533-1576

## CATx and Fiber Cable Selectors

Easily find the exact cable  
you need in seconds!

**CATx Cable Selector**

**Category**  
please select ...

☐ Patch ☐ Bulk  
☐ Stranded ☐ Solid  
☐ PVC ☐ Plenum  
☐ un-Shielded ☐ Shielded

**MHz Rating**  
please select ...

**Color Preference**  
please select ...

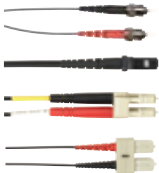
**Boot or LockPORT**  
please select ...

☐ Straight Pinned  
☐ Cross Pinned

**Length Preference, feet**  
please select ...

[Helpful hints.](#) [find cable](#)

Select exactly what you want:



Fiber



CATx



Bulk



Multiple colors

Plus, shielding, boots, even customs.

[blackbox.com/go/Configurators](http://blackbox.com/go/Configurators)

CATx Cable Selector: [blackbox.com/go/CopperSel](http://blackbox.com/go/CopperSel)

Fiber Cable Selector: [blackbox.com/go/FiberSel](http://blackbox.com/go/FiberSel)

Custom Cable and Adapter Configurator: [blackbox.com/go/CableandAdapterCon](http://blackbox.com/go/CableandAdapterCon)



See how to identify  
counterfeit cable.  
Watch this informative,  
three-minute video.  
Andy Schmeltzer, the  
“Cable Guy” at Black Box,  
explains what to look for  
when you purchase cable.



Counterfeit Cable **Watch Now!**

[www.blackbox.com/go/Videos](http://www.blackbox.com/go/Videos)



# When you need it made to order, count on Black Box.

We'll design and build the exact cable, adapter, wallplate, and other cabling and infrastructure products you need.



*Custom octopus cable*



*Custom grounding bar*

Can't find what you need? Tell us what you want to accomplish and we'll custom design a solution for you. Depending on your application, we can modify existing cables, adapters, and other products to your specs—or we can build them from scratch. Best of all, the engineering support and custom design service is absolutely free.

## Custom capabilities include:

- UTP, fiber, coax, A/V, RS-232, and more.
- Bundled cables.
- Y and octopus cables.
- Special connectors.
- Feed-through faceplates.
- Special pinning.
- Nurse call cables.
- And much, much more.



Learn more at [blackbox.com/go/Customs](https://blackbox.com/go/Customs)

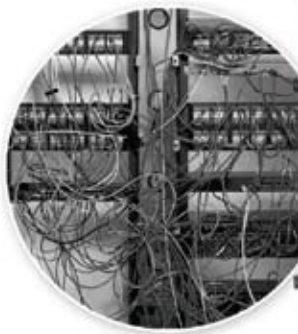
## Cable 911

# Order custom-length CAT5e/6 patch cables in the exact length you need.

- CAT5e or CAT6
- Shielded or unshielded
- PVC jacket or plenum\*
- Snagless boot or basic connector
- Solid or stranded conductor
- Nine colors
- Lengths from 1 to 99 feet

If you have an emergency, we can ship up to 50 cables the same day if ordered by 1 p.m.

\* Plenum is available only with solid-conductor assemblies.



*Why settle for this mess when you can get exactly what you want tomorrow?*



**Cable 911: 724-746-5500**



## Cold Front

# Use passive liquid cooling at the rack level and cut

- Heat-Transfer Doors use liquid to neutralize heat at the source.
- Coolant Management System intelligently moves liquid through Heat-Transfer Doors.
- Supports five times the computing power of air-cooled facilities.
- Installs easily and requires no rearrangement of your enclosure.
- Saves on energy bills. Reduces energy consumption of indoor cooling units by 90% or more!
- Neutralizes heat at the source, returning cooled air into the data center and providing up to 33 kW of cooling.
- Eliminates the need for hot-aisle/cold-aisle configurations—place your computing equipment where you want it
- ♦♦ **WARRANTY** — 1 Year

Nothing cools like chilled water. Now you can harness the cooling power of liquid in your data center with Cold Front™.

Cold Front is the perfect solution for tightly packed server rooms or high-density enclosures. It works to sensibly cool a data center enclosure—and can lower data center total cost of ownership by as much as 50% because it reduces both energy and space requirements.

The Heat-Transfer Door (HTD) neutralizes heat at the source. Chilled liquid passing through the door cools the exhaust air before it re-enters the data center. It requires no fans or electricity because it uses the server fans to move the hot air through the door.

The door uses a closed-loop circulatory system, and its specially designed perforations and coil maintain airflow through the cabinet.

Because the Heat-Transfer Door features a passive design with no moving parts, it increases efficiency and eliminates the need for fans (and reduces noise).

The door replaces the existing rear door and installs easily, requiring little if any regular maintenance. Plus, it can be installed without the need for pressurized raised floors, air plenums, or exhaust chimneys. It also eliminates secondary pump systems for condensate.

Choose from top- or bottom-feed versions, as well as models that support 100% neutralization (maximum) of the heat load for 24–33 kW of cooling capacity\*. The door

works with most enclosures and can be ordered for many standard cabinet sizes.\*

Use the door with our Coolant Management System (CMS) for consistent data center cooling that grows as your computing capacity increases.

The advanced CMS works with enclosure-mounted Heat-Transfer Doors to keep data center equipment running cool and lower your overall energy consumption.

On a primary loop, it attaches to your chilled water system or a dedicated chiller. On its secondary loop, the system connects to the Heat-Transfer Doors, providing up to 20 or 260 kW of cooling capacity, depending on the model.

The system maintains the isolated secondary loop supply temperature above the dew point of the data center, preventing condensation and ensuring 100% sensible cooling.

## Buyers' Checklist

- ✓ How many cabinets do you have in your data center?
- ✓ What is the load (kW) in your cabinets?
- ✓ Do you have a chiller available?
- ✓ Do you want to run hoses overhead or under a raised floor?



# power and cooling costs by 50%.

## SAVE

15% on your first order  
from Black Box.

See page 2.



The system does this by monitoring the temperature and pressure conditions and increases and decreases in flow as conditions change in your data center. Heat removed by connected Heat-Transfer Doors is then ejected to the chilled water supply by using a stainless steel plate heat exchanger.

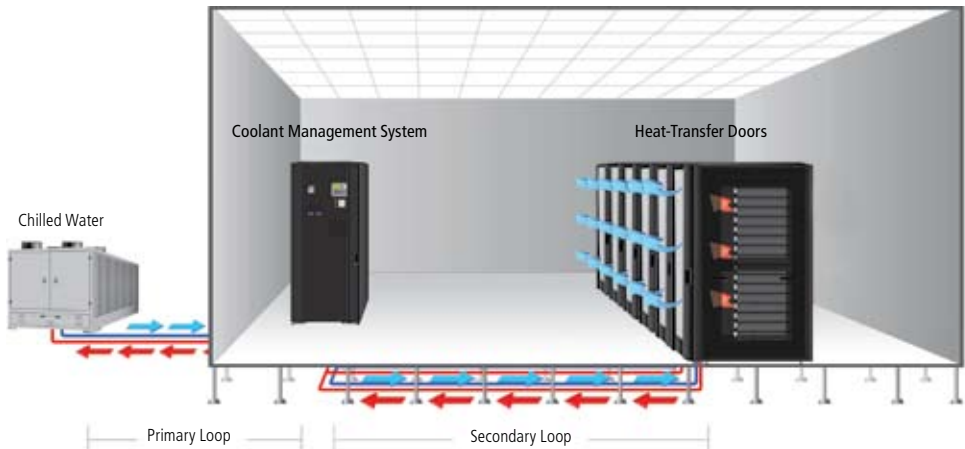
What's more, the system's controller provides intelligent monitoring, interfacing with building management systems and Web management tools for high reliability.

The system is available in two base versions:

- A floor-mount model that boasts up to 260 kW of cooling capacity, supports up to 48 Heat-Transfer Doors, is easy to install and maintain, and can be placed next to your IT enclosures or outside of the white space entirely.
- A smaller, 6U-high rackmount system that supports up to 20 kW of cooling capacity and provides a cost-effective way to support one or two Heat-Transfer Doors.

\*Maximum cooling capacities are for 100% neutralization of heat load using ASHRAE allowable conditions: EWT @ 55° F (13° C); flow rate @ 12 GPM (45 LPM); EAT to the rack @ 90° F (32° C); 2500 CFM; dew point @ 54° F (10° C) or lower.

† Compatible with Black Box® Elite™ cabinets and most other major cabinet brands, including APC®, Rittal®, HP®, CPI®, and others.



Learn more at [blackbox.com/go/ColdFront](https://blackbox.com/go/ColdFront)

Webinar, white paper, brochure, and more



## Cold Row

# Scalable, energy-efficient cooling for new or

- Ideal for hot-spot or high-density cooling in small to enterprise data centers.
- Highest cooling capacities in the industry—up to 75 kW per unit.
- Choose from chilled water and direct expansion models.
- Suitable for open and contained hot aisle/cold aisle configurations.
- Add Cold Row units as your data center grows.
- ♦♦ **WARRANTY** — 2 Years (with startup service)

Designed for scalability, reliability, and seamless integration into new or existing data centers, Black Box Cold Row™ rack cooling solutions are suitable for use in open and contained hot aisle and cold aisle configurations. Choose from two methods of cooling: chilled water (CW) or direct expansion (DX).

Chilled water is supplied to the Cold Row unit via a building chiller or other chilled water plant. Chilled water has a high affinity for heat, thus making it a very efficient cooling method. The Black Box controller allows for independent valve and fan control so the unit can adjust immediately, and precisely, to varying heat loads. This optimizes energy efficiency.

Direct expansion units cool air with a condenser-based system using non-ozone depleting R410A refrigerant and either air, water, or glycol. Water is supplied by the building's water plant and heat is rejected to the outdoor environment via air-cooled condensers for air-cooled units, the water tower for water-cooled units, or fluid coolers for glycol-cooled units.

Both the CW and DX solutions offer the highest cooling capacities in the industry. Three independently adjustable EC fans ensure maximum efficiency. Cold Row is ideal for data centers with or without raised floors, in both low- and high-density areas.

Cold Row adapts to fit most racks. The Black Box controller can link up to eight units or connect to a building management system (BMS). The units are quiet, too—they provide high airflow with low noise. Built-in redundancy and capacity-assist features save energy.

The Cold Row CW solution has two-way or three-way valves; the Cold Row DX Solution has an electronic expansion valve that precisely and quickly controls the cooling capacity. The DX also has a variable compressor that adjusts for precise cooling capacity and provides 50% lower power consumption at startup.

## Buyers' Checklist

- ✓ How many kW of cooling do you need for your data center?
- ✓ Are you looking for redundancy in your cooling?
- ✓ Is containment a viable solution for you?
- ✓ Are you considering chilled water or DX?



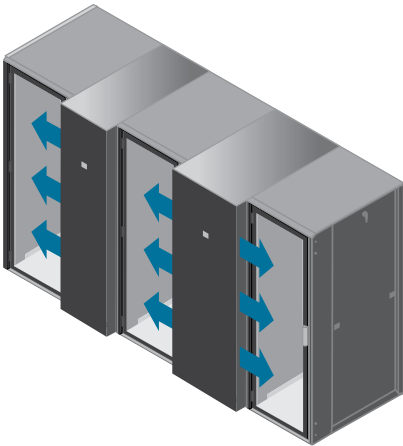
Learn more at [blackbox.com/go/ColdRow](https://blackbox.com/go/ColdRow)



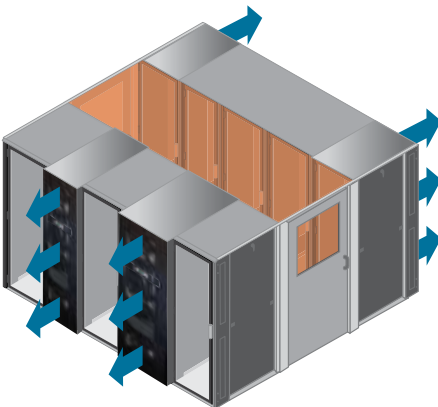
# existing data centers.



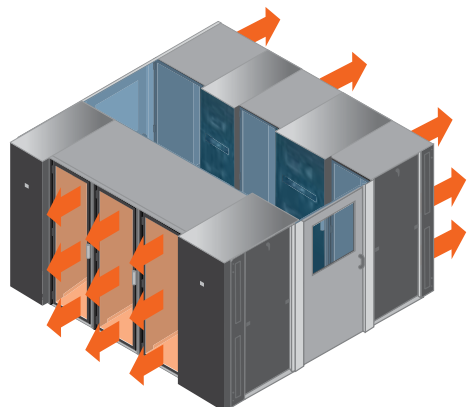
Questions? Click  
here to chat or  
have us call you.



*Cold Row with side discharge, no containment: The cool air is being directed to the front of the cabinets with a side discharge model.*



*Hot aisle with front discharge: The hot aisle is contained and the Cold Row units are cooling the cold aisle. Separating the hot aisle from the cold aisle increases efficiency.*



*Cold aisle with front discharge: The Cold Row units are injecting cold air into the cold aisle where it is contained to prevent mixing, increasing efficiency and providing redundancy in case a unit fails.*



## Elite Cabinets

Get exactly what you need with these robust cabinets for any application.



Small top opening provides a space for accessories such as Waterfall Brackets.

Ladder Rack Brackets.

Large top opening can be used as 12U of racking space, or install a top panel with or without fans.

Heavy-duty welded construction.

M6 square holes or 10-32 tapped rails.

Vertical PDU 19" Mounting Kit.

Dual Universal PDU Brackets are standard on the inside of the frame.

Optional bottom plate for passive cooling.

Front-to-Back Cable Manager.

All Elite Cabinets come with both leg levelers and casters.

Cable Trough Kit.

Vertical Cable Manager.

Vertical Lacing Bar

Plenty of cable lacing points built into the frame.

Generous knockouts for cable pass-throughs on all corner posts.

Optional retractable anti-tip legs.

**Starting at \$1259.00**



EC45U3042SMD56YK

### More features and options than any other Black Box cabinet.

The Elite™ Cabinet family from Black Box delivers more features and options than any other Black Box cabinet—more door and panel choices, more cable management, features like high-flow mesh on all mesh doors, and dual universal PDU mounting brackets.

Plus Elite Cabinets feature heavy-duty, welded steel construction and come with the protection of a lifetime Black Box® Double Diamond™ warranty. The cabinets arrive fully assembled and ready to populate.

### Two minutes to configure, two days to ship.

Choose from popular in-stock Elite Cabinet configurations or go to [blackbox.com/go/Elite](https://blackbox.com/go/Elite) to start configuring your cabinet. The cabinets can be customized to your specifications in two business days or less. Just choose the cabinet size, type of rails, and door and panel styles you need with the easy-to-use Configurator. You can also add anti-tip legs. Standard keyed locks on doors can be replaced by a combination lock.



Learn more at [blackbox.com/go/Elite](https://blackbox.com/go/Elite)

Brochure, Cabinet Configurator.



### ClimateCab Cabinets

Install servers without additional cooling or costly infrastructure.

- Save energy and money by cooling only the cabinet rather than a whole room or IT center.
- Include air-conditioning units with digital controllers.
- Protect against falling dirt; circulating dust, lint, and debris; and dripping or splashing liquids in indoor environments.
- Available with 5000-, 8000-, or 12,000-BTU air conditioners.
- Feature standard 19" rails with M6 mounting holes and a fully welded 12-gauge steel frame.
- ♦♦ **WARRANTY** — 18 Months

ClimateCab NEMA 12 Server Cabinets are your answer when you need to house servers but don't have a cooling infrastructure in place. In smaller installations, you can save thousands by using a ClimateCab cabinet instead of installing a complete data center with a custom cooling system and raised floors. The ClimateCab is ideal for indoor use when you need to keep your servers outside a climate-controlled data center.

Choose from 24U or 42U, multiple depths, M6 or tapped rails, and three air-conditioner sizes in 120V or 230V versions.



CC42U5000M6

### Buyers' Checklist

- ✓ What load will be in the cabinet?
- ✓ Do you want redundant power?
- ✓ How many rack units do you need and how deep is the equipment being mounted?
- ✓ Where will the cabinet be located in your facility?
- ✓ What is the ambient temperature where the cabinet will be located?



Learn more at [blackbox.com/go/ClimateCab](https://blackbox.com/go/ClimateCab)

CC24U and CC42U series

**Starting at \$3109.00**

### Zone 4 Seismic Cabinets

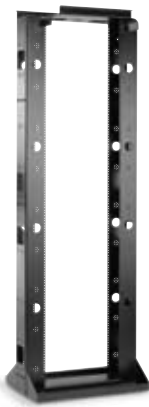
Protect servers and networking, photo, and voicemail equipment through Zone 4 seismic activity.

- Weight capacity of 1100 pounds.
- Vented heavy-gauge steel base can be bolted to floor with seismic-rated fasteners.
- Door and side panels are removable for easy installation and access.
- Top has two cable entry ports with caps and grommets, and two fan-ready cutouts with finger guards.
- Performance rating based on NEBS-Telecordia GR-63-ORE standard vibration test.
- ♦♦ **WARRANTY** — 1 Year

*NOTE: Ships via motor freight.*



**FREE, Live,  
24/7 Tech  
Support**



RM5200A



RM5100A

Item	Code	List Price
Zone 4 Seismic Cabinets, 45U		
84" H x 28" W x 40" D	RM5100A	<b>\$2499.95</b>
84" H x 28" W x 32" D	RM5110A	<b>\$2499.95</b>
Zone 4 Seismic Racks, 45U		
2-Post	RM5200A	<b>\$999.95</b>
4-Post	RM5210A	<b>\$1799.95</b>



Elite QuietCab

Reduce noise in your office and increase productivity.

- Reduces equipment noise to less than background noise or even to a whisper.
- Attenuates sound by an amazing 28.5 dB—the most you can get today in a soundproof enclosure.
- Independently tested as the most effective quiet cabinet in the world.
- ♦♦ **WARRANTY** — 1 Year

Why noise control? Increased productivity. Increased profits. Prolonged exposure to noise creates stress and lowers morale. It can also lead to an increase in accidents and errors.

Ideal for environments where you need to store network equipment near workers, such as offices, schools, retail establishments, or medical offices, the Elite QuietCab provides noise reduction without compromising cooling capability.



Item	Code	List Price
Elite QuietCab		
12U	QCE12U	\$3959.00
24U	QCE24U	\$5649.00
42U	QCE42U	\$7599.00

Elite Wallmount Cabinets

Adding accessories or equipment is easier than ever!



- Large openings in back panel enable you to easily install patch panels or other prewired equipment.
- Accessories that fit the 3U opening in other Elite cabinets also fit into these cabinets' 3U opening.
- Doors can be reversed to open left or right.
- Double hinged for easy access

to rear of equipment.

- Have keylocks on front and side.
- Ship with one conduit panel.
- Include one pair of 10-32 rails. Order additional rails for 4-point mounting.



EWM26U482430

Item	Code	List Price
Elite Wallmount Cabinets		
24" H x 24" W (12U)		
18"D	EWM12U242418	\$609.95
24"D	EWM12U242424	\$624.95
30"D	EWM12U242430	\$639.95
36" H x 24" W (20U)		
18"D	EWM20U362418	\$684.95
24"D	EWM20U362424	\$699.95
30"D	EWM20U362430	\$714.95
48" H x 24" W (26U)		
18"D	EWM26U482418	\$804.95
24"D	EWM26U482424	\$819.95
30"D	EWM26U482430	\$834.95

You may also need...

Elite Wallmount Cabinet Angle Bracket		
45°	EWM45DAB	\$36.95
90°	EWM90DAB	\$31.95
Elite Wallmount Cabinet Rear Standoff Bracket		
	EWM1U6SB	\$24.99
Elite Wallmount Cabinet Dust Cover Plate		
	EWMDCP	\$18.95



Configure a custom wallmount cabinet at [blackbox.com/go/WallCabSel](https://blackbox.com/go/WallCabSel)



## Tablet Carts

Store, transport, and charge tablets and e-readers. Sync iPad tablets.

- Perfect for schools, government and training facilities, and corporate environments.
- Store, transport, and charge tablets and e-readers such as the Barnes & Noble® Nook® Touch and Nook Color, Amazon Kindle® and Kindle Fire, Sony Reader®, Kobo eReader®, and the Samsung® Galaxy®.
- Sync iPad® tablets.
- Choose from charging only and charging/syncing models.
- Available in capacities of 16 and 32.
- Hinged shelves open easily for feeding power cables through and close tightly with protective foam to keep cords from moving once in place.



TAB32C

- Locking tambour doors keep contents secure. The three-point locking rear access panel limits access to electrical components and the timer so IT configurations remain secure.
- ♦♦ **WARRANTY** — 2 Years

## Specifications | Black Box Tablet Carts

	Max. AC Draw	Size				
		Overall	Width with Handle	Slots	Storage Shelf	Weight
TAB16C	4A					145 lb. (65.8 kg)
TAB32C	8A	37.9"H x 31.25"W x 26.25"D (96.3 x 79.4 x 66.7 cm)	35.25"W (89.5 cm)	7.9"H x 0.75"W x 10.5"D (20.1 x 1.9 x 26.7 cm)	7.9"H x 20.75"W x 11.5"D (20.1 x 52.7 x 29.2 cm)	155 lb. (70.3 kg)
TAB16CS	4A					150 lb. (68 kg)
TAB32CS	8A					160 lb. (72.6 kg)

### Need another type of cart?

- Laptop Carts (LTC20, 26, 32) store, protect, and charge up to 32 laptop computers.
- NetBook Carts™ (NBC20, 26S, 27XB, 30, 32S) store, protect, and charge up to 32 netbook computers.

For info on these solutions and more, go to [blackbox.com/go/LaptopCarts](http://blackbox.com/go/LaptopCarts) or call 724-746-5500.

Item	Code	List Price
Tablet Carts		
Charging		
16-Slot	TAB16C	<b>\$1999.00</b>
32-Slot	TAB32C	<b>\$2299.00</b>
Charging and Syncing		
16-Slot	TAB16CS	<b>\$2249.00</b>
32-Slot	TAB32CS	<b>\$2549.00</b>



Learn more at [blackbox.com/go/TabletCarts](http://blackbox.com/go/TabletCarts)



Deluxe Fiber Optic Test Kits

Everything you need for advance field testing of fiber.

- Choose the kit you need: Single-Mode, Multimode, or Single-Mode/Multimode.
- All kits include Light Source, Power Meter, Scope, and case.
- ♦♦ **WARRANTY** — All: 2 Years



FODTK-SMMM-VFL

Item	Code	List Price	Item	Code	List Price
Deluxe Fiber Optic Test Kits			Deluxe Fiber Optic Test Kits with Visual Fault Locators		
Single-Mode	FODTK-SM	\$2953.95	Single-Mode	FODTK-SM-VFL	\$3353.90
Multimode	FODTK-MM	\$2613.95	Multimode	FODTK-MM-VFL	\$3013.90
SM/MM	FODTK-SMMM	\$4648.95	SM/MM	FODTK-SMMM-VFL	\$5048.90

LanScope Network Analyzer

Advanced Gigabit network and cable tester provides expert help at an affordable price.



- Quickly maintain and optimize 10/100/1000BASE-T networks with a single tester.
- Features include cable testing, link detection, ping and trace, packet monitoring, traffic generation, VoIP, e-mail, inline PoE tests, device discovery, and more.
- Test your network under load with flexible traffic generation.
- ♦♦ **WARRANTY** — 1 Year

Item	Code	List Price
LanScope Network Analyzer	LANSCOPE	\$1895.00

LanScopePro Copper Fiber Network Analyzer

Test copper and fiber and troubleshoot from the cabling to the packet.

- Almost all the features of the LanScope plus fiber capabilities!
- Quickly change interface modules to instantly connect to single-mode, multimode, and bidirectional fiber with data rates up to 1.25 Gbps, as well as 10/100/1000BASE-T devices.
- ♦♦ **WARRANTY** — 1 Year



Item	Code	List Price
LanScopePro Copper Fiber Network Analyzer		
Single-Mode	LANSCOPEPRO-SM	\$2595.00
Multimode	LANSCOPEPRO-MM	\$2495.00

 Learn more at [blackbox.com/go/Videos](https://blackbox.com/go/Videos)

EZ-RJPRO CAT5e Termination Kit

Crimp and trim EZ-RJ45 connectors in one step.



What's included

- EZ RJPRO (FT1200A)
- Stripper (FT231A)
- (60) Plugs (I4) CAT5EEZ-15PAK)
- Cable tester (EZCT)
- Case (FT390)

Item	Code	List Price
EZ-RJPRO™ CAT5e Termination Kit		
	FT1200AKIT-R2	\$239.95
EZ-RJPRO High-Density Crimp Tool		
	FT1200A	\$89.95
CAT6 EZ-RJ45 Modular Plugs, 30-Pack		
	CAT6EZ-30PAK	\$39.95
CAT5e EZ-RJ45 Modular Plugs, 30-Pack		
	CAT5EEZ-30PAK	\$22.95



### Outlet-Managed PDUs

Remotely switch and manage power for one network device or multiple devices.



- Get complete power control: remote and timed individual outlet switching, auto on/off/reboot, load shed switching, outlet sequencing, and more.
- Switch power on/off for individual network devices or for groups of equipment.
- Monitor equipment power and automatically notify you of changes in current levels, circuit breaker status, temperature, unauthorized access attempts, ping response, and more.
- Notify you via e-mail, text, SNMP, SYSLOG, and audible alarms when user-defined thresholds are exceeded.
- Save energy and money by shutting off power to equipment during downtimes.
- ♦♦ **WARRANTY** — 1 Year

MPSH8-, MPSH16- series  
Starting at \$676.95

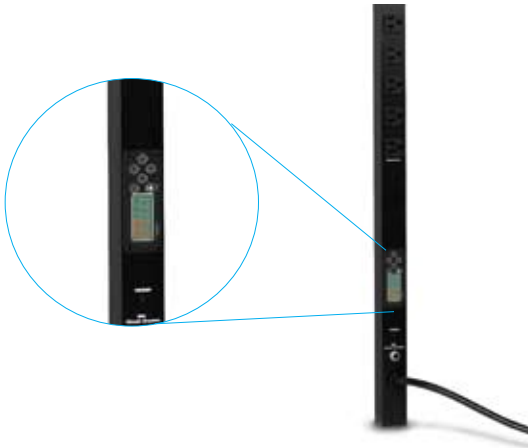
 Learn more at [blackbox.com/go/OMPDU](https://blackbox.com/go/OMPDU)

### Metered Vertical PDU

Space-saving PDU measures and displays AC current.

- Provides 24 NEMA 5-20R outlets on a strip that mounts to the vertical rails in your cabinet or rack.
- Includes mounting clips.
- Three-digit LED display shows current draw.
- Alarm notifies you when current threshold has been reached.
- Include a 15-foot (4.5-m) NEMA L5-20P power cord.
- Horizontal model also available.
- ♦♦ **WARRANTY** — 1 Year

*NOTE: This PDU does not provide surge protection.*



Item	Code	List Price
Metered Vertical PDU	PDUMV24-S20-120V	\$185.95

### 20-Amp Rackmount Power Strip with Front and Rear Outlets

Get 14 outlets in only 1U of rack space.

- Organize your power cords — front and rear outlets make access easy.
- Features 20-amp overcurrent protection.
- Fits in only 1U of rack space.
- Includes 6-ft. (1.8-m) cord with NEMA L5-20P plug.
- ♦♦ **WARRANTY** — 1 Year

*NOTE: This strip does not provide surge protection.*



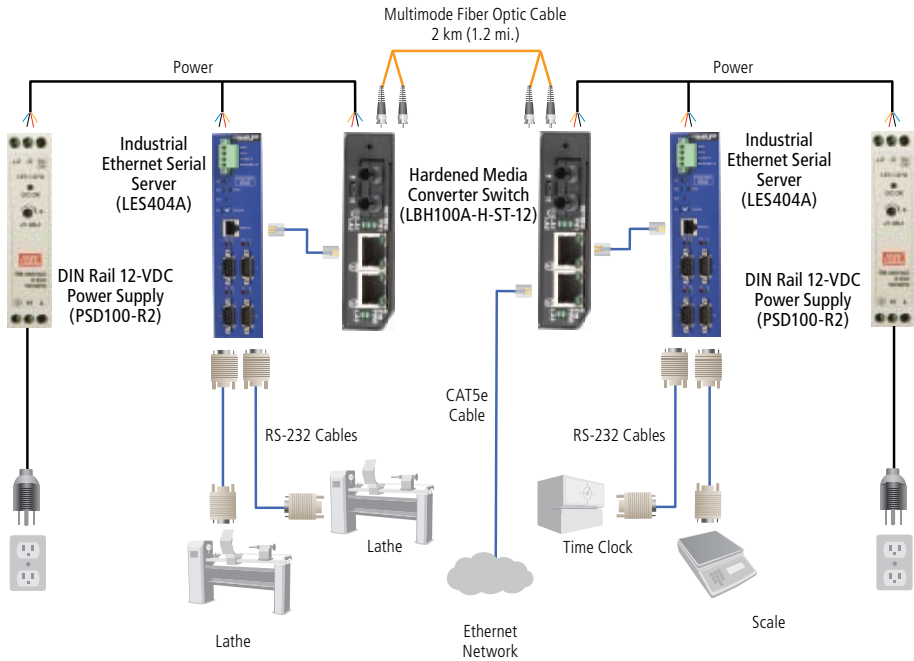
Item	Code	List Price
20-Amp Rackmount Power Strip with Front and Rear Outlets	PDBUH14-S20-120V	\$109.95



# Put industrial communications on the right track

- Industrial controls
- Factory floors
- Traffic control
- Utility stations

Most of today's IT runs on Ethernet, but if you're looking for industrial connectivity with RS-232, RS-485, or RS-422 serial interfaces, look to Black Box. We have what you need to transmit and control data in harsh areas for communicating with factory floor machinery and process control equipment.



Learn more at [blackbox.com/go/Industrial](https://blackbox.com/go/Industrial)

White Papers, Case Study

## RS-232↔RS-422/RS-485 DIN Rail Converter with Opto-Isolation

- Optically isolates and converts unbalanced half- or full-duplex RS-232 signals to optically isolated and balanced full-duplex RS-422 or 2-wire half- or 4-wire full-duplex RS-485.
- Switch-selectable data rates between 2400 bps and 19.2 kbps.
  - Conveniently mounts on DIN rails.
  - ♦♦ **WARRANTY** — 1 Year



Item	Code	List Price
RS-232↔RS-422/RS-485 DIN Rail Converter with Opto-Isolation	ICD100A	\$169.95

You may also need...		
DIN Rail, 1-m (3.2-ft.)	DR100	\$8.95

## DIN Rail RS-232/RS-485↔Fiber Driver

- Enables any two async serial devices to communicate half- or full-duplex over two multimode ST® fibers at distances up to 2.5 miles (4 km).
- RS-232 signals are supported up to 115.2 kbps; RS-422 or RS-485 signals are supported up to 460.8 kbps.
- Replaces converters and isolators when you connect remote equipment.
- ♦♦ **WARRANTY** — 1 Year



Item	Code	List Price
DIN Rail RS-232/RS-485 Fiber Driver	MED100A	\$294.95

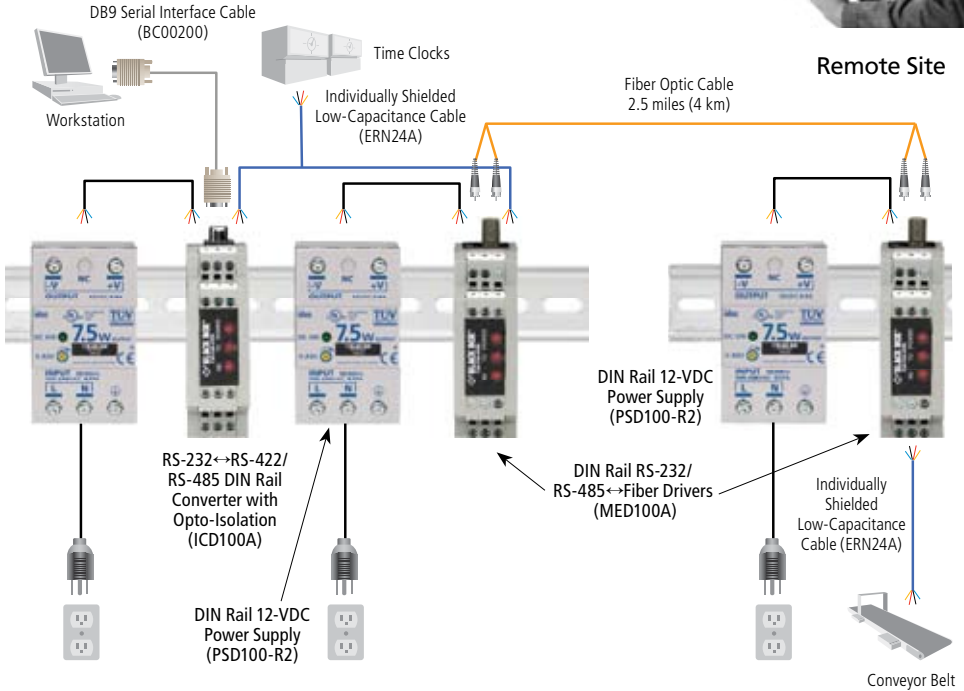
You may also need...		
DIN Rail, 1-m (3.2-ft.)	DR100	\$8.95



# with DIN rail solutions.

- Public spaces
- Facility monitoring

For more solutions, see [blackbox.com/go/Industrial](http://blackbox.com/go/Industrial).  
Or call us anytime for FREE pre-application and post-sales engineering support.



## Industrial Ethernet Serial Servers

- Control remote serial devices across your Ethernet network.
- Slim-line DIN rail box is IP30 rated for use in dirty environments.
- Support RS-232, RS-422, and RS-485 serial interfaces.
- 4-screw power connector.
- **WARRANTY** — 5 Years



LES404A

Item	Code	List Price
Industrial Ethernet Serial Servers		
1-Port	LES401A	\$230.95
2-Port	LES402A	\$345.95
4-Port	LES404A	\$574.95

You may also need...

12-VDC DIN-Mount Power Supply PSD100-R2	\$64.95
--	---------

## Media Converter Switches

- Choose standard, hardened, or extreme versions for different temperature ranges.
- Available in a wide range of fiber and power options.
- Include one 10- or 100-Mbps fiber port and two 10-/100-Mbps switch ports.
- Mount on DIN rails or rackmount up to 16 units in an optional powered tray.
- **WARRANTY** — 3 Years



LBH110A-ST

Starting at \$194.95

**learn  
MORE!**

[www.blackbox.com/  
go/MCSwitches](http://www.blackbox.com/go/MCSwitches)



## Pure Networking Media Converters

# Rackmount or standalone, these converters

- Popular media converter interfaces at value prices.
- Layer 1 media conversion is transparent to data for plug-and-play installation.
- Use as standalone media converters or in a convenient 14-slot rackmount chassis.
- Choose from 10-/100-Mbps converters or Gigabit converters.
- Diagnostic LEDs for easy troubleshooting.
- SFP model accepts standard 1250-Mbps SFPs.
- Link-fault passthrough alerts you to “silent failures” on the fiber side.
- Fast Ethernet models feature autonegotiating UTP ports.
- Auto MDI/MDI-X on all copper ports.
- ♦♦ **WARRANTY** — 1 Year

Black Box® Pure Networking™ Media Converters enable you to extend your network over fiber at a price that won't eat up your budget. Available in basic 10-/100- or 1000-Mbps models, these affordable converters can cover most of your network's media conversion requirements—there's even a rackmount chassis for enterprise network applications.

The SFP Converter (LGC200A) features a Gigabit twisted-pair port plus a standard SFP slot, which enables you to customize the converter with an SFP to get the fiber interface of your choice. This converter accepts any standard 1250-Mbps SFP.

Pure Networking Media Converters may be used individually or installed in the 14-Slot Rackmount Chassis. The chassis mounts on standard 19" rails and holds and powers up to 14 media converters in only 2U of rack space.

The Rackmount Chassis' passive-backplane architecture ensures steady power input for each media converter. Overvoltage and over-current protection guard the converters from power surges and spikes. Add the optional Redundant AC Power Supply to the chassis to provide backup power in case the first power supply goes down. Both media converters and power supplies are hot swappable for maximum uptime.

## Black Box Explains

### Media converter chassis types.

Standalone media converters are used individually to convert between two cable types. These media converters are ideal for use in small networks and for connecting remote sites but can quickly be outgrown as your network expands.

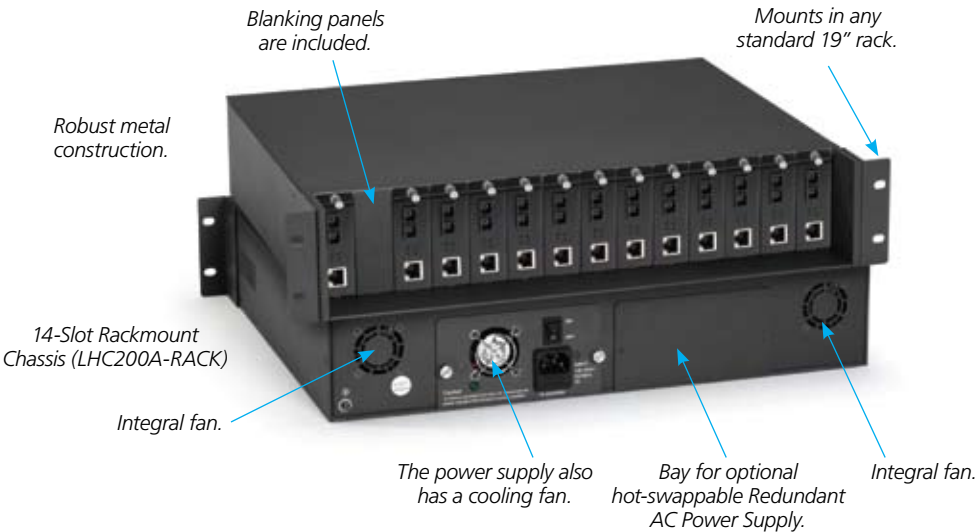
Chassis-based or modular media converter systems are normally rackmountable and have multiple slots to house media converter modules, giving you room to grow. These systems chassis also provide power to the media converters and often feature SNMP management for integration into a managed network. Chassis-based media converters are usually used in data centers when many Ethernet segments of different media types need to be connected in a central location. These media converter systems offer great

port density, but modules can't be used on their own without a chassis—to use an individual module, you must install it in a compatible chassis.

An ideal media-converter solution for many small-to-mid-sized networks is a blended system in which each media converter works either as a standalone media converter or can be mounted with other converters in a rackmount chassis. Although these blended systems generally don't offer the high-end management features of enterprise-level chassis-based systems, they do offer a great deal of versatility and value because each media converter can be used and reused where it's needed most, whether it's mounted in a rack in a data center or working as an individual standalone unit on a desktop.



won't break the bank!



Buyers' Checklist

- ✓ Chassis-based media converters are a space-saving way to add fiber links without replacing your copper-based switches.
- ✓ To maximize uptime, order a second power supply for the chassis.
- ✓ For unusual cabling requirements, choose the SFP model, which can be customized to virtually any interface through the use of an SFP.



Diagnostic LEDs on the front panel enable you to troubleshoot at a glance.



10-/100-Mbps models have DIP switches for speed, duplex, link-fault passthrough, and auto-negotiation.

Item	Code	List Price
Pure Networking Media Converters		
10-/100- Copper to 100-Mbps Fast Ethernet Duplex Fiber		
Multimode, 1310-nm, 2 km, SC	LHC201A	\$64.95
Single-Mode, 1310-nm, 20 km, SC	LHC202A	\$104.95
1000-Mbps Copper to 1000-Mbps Gigabit Ethernet Duplex Fiber		
Multimode, 850-nm, 0.5 km, SC	LGC201A	\$123.95
Single-mode, 1310-nm, 15 km, SC	LGC202A	\$184.95
SFP	LGC200A	\$81.95
To rackmount and power up to 14 media converters, order...		
14-Slot Rackmount Chassis	LHC200A-RACK	\$299.95
For redundant power, order...		
Redundant AC Power Supply for 14-Slot Rackmount Chassis	LHC200A-RACK-PS	\$129.95

SFPs, pp. 54–55.




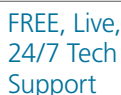
Learn more at [blackbox.com/go/PNMC](https://blackbox.com/go/PNMC)



## Micro Mini Media Converters

Ultra-compact converters bring fiber to the desktop and other tight spaces.

- Bring fiber to the desktop conveniently and cost-effectively.
  - Smallest media converters available; tuck them unobtrusively behind a PC.
  - Ultra compact and weigh less than 2.5 ounces.
  - USB-powered for portability, or use with the included AC adapter.
  - Fiber port supports 100BASE-FX or 1000BASE-X.
  - Autonegotiating 10-/100-/1000-Mbps UTP ports.
  - Support Jumbo Ethernet frames up to 10,240 bytes.
  - LED indicators for power, UTP, and fiber status.
  - ♦♦ **WARRANTY** — 2 Years
- 

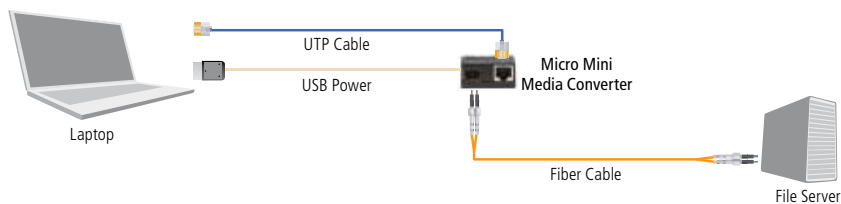


Black Box® Micro Mini Media Converters are ideal for mobile applications where light weight, compact size, and low power requirements are critical.

Weighing less than 2.5 ounces and about the length of a house key, these ultra-compact media converters are portable yet powerful. They're transparent to data and have an RJ-45 port that autonegotiates for speed, duplex


mode, and crossover functions. Just plug and play—no drivers, no setup, no fuss.

Micro Mini Media Converters can be USB-powered, so you can bring fiber to the desktop without needing to find another power outlet. When plugged into a computer's USB port, the media converter shuts down automatically when you turn off the computer, which saves energy.



## SFP and SFP+ Transceivers

## Bring high-speed fiber interfaces to a switch or media converter.

- Adapt an SFP or SFP+ slot to fiber.
- Choose from models to support network speeds from Fast Ethernet to 10-Gigabit Ethernet.
- Transparent to data.
- Feature extended diagnostics.
- Hot swappable, so you can change interfaces on the fly.
-  **WARRANTY** — 1 Year







Save 10% on orders of \$250.00 or more. See page 2.

Item	Code	List Price
Micro Mini Media Converters		
10-/100-/1000-Mbps Copper to 100-Mbps Fast Ethernet Duplex Fiber SFP Converter	LMC400A	\$184.95
Multimode, 1310-nm, 5 km, ST	LMC401A	\$184.95
Multimode, 1310-nm, 5 km, SC	LMC402A	\$184.95
Single-Mode, 1310-nm, 30 km, ST	LMC403A	\$264.95
Single-Mode, 1310-nm, 30 km, SC	LMC404A	\$264.95
10-/100-/1000-Mbps Copper to 1000-Mbps Gigabit Ethernet Duplex Fiber SFP Converter	LMC4000A	\$384.95
Multimode, 850-nm, 0.5 km, ST	LMC4001A	\$409.95
Multimode, 850-nm, 0.5 km, SC	LMC4002A	\$409.95
Single-Mode, 1310-nm, 12 km, ST	LMC4003A	\$499.95
Single-Mode, 1310-nm, 12 km, SC	LMC4004A	\$499.95
You may also need...		
Wallmounting Bracket for Micro Mini Media Converters	LMC400-WALL	\$14.95

 Learn more at [blackbox.com/go/MMconverters](https://blackbox.com/go/MMconverters)

Speed	Fiber Type	Wave-length	Maximum Distance	Connector Type	SKU	Price
10-Gbps SFP+	Multimode	850 nm	300 m	LC	LSP-10G-MMLC	\$799.95
	Single-mode	1310 nm	10 km	LC	LSP-10G-SMLC10	\$1699.95
1250-Mbps (Gigabit) SFP	Multimode	850 nm	550 m	LC	LFP200	\$69.95
	Single-mode	1310 nm	20 km	LC	LFP201-R2	\$69.95
	Single-mode	1310 nm	30 km	LC	LFP202	\$159.95
	Single-mode	1310 nm	40 km	LC	LFP203	\$179.95
	Single-mode	1550 nm	70 km	LC	LFP260	\$267.95
155-Mbps (Fast Ethernet) SFP	Multimode	850 nm	2 km	LC	LFP100	\$69.95
	Multimode	1300 nm	2 km	LC	LFP101	\$69.95
	Single-mode	1310 nm	15 km	LC	LFP102	\$69.95
	Single-mode	1310 nm	40 km	LC	LFP103	\$79.95



Pure Networking Ethernet Switches  
The quick way to build a small network.

Monthly  
Specials:  
blackbox.com  
/go/Promos

- Easy to set up and easy to afford.
- Compact, attractive case for desktop use.
- Autosensing ports adapt automatically to 10-, 100-, or 1000-Mbps Ethernet.
- MDI/MDI-X on all ports.
- ♦♦ **WARRANTY** — 1 Year



LGB105A

The Pure Networking family of Ethernet components from Black Box makes it easy for you to build a small 10-/100-/1000-Mbps Ethernet network. Pure Networking components are affordable, go together easily, and work with any standard Ethernet components you may already own.

These nimble switches are ideal for home or small-office networks. They also provide a quick way to add small workgroups to a large network.

Item	Code	List Price
Pure Networking Ethernet Switches		
10/100		
5-Port	LB005A	\$33.95
8-Port	LB008A	\$39.95
16-Port	LB016A	\$89.95
10/100/1000		
5-Port	LGB105A	\$69.95
8-Port	LGB108A	\$79.95

Gigabit Web Smart Switch, 24-Port  
Manage this Gigabit switch with your Web browser.



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Pro-Tips

The mid-range management solution “Smart” or Web-managed switches fall into a middle ground between unmanaged switches and fully managed enterprise switches with SNMP. Smart switches provide a Web interface that enables basic management functions such as port settings and VLANs. Because they’re priced much lower than a fully managed switch, smart switches are an economical choice for mid-range networks that need some management.

- Configure and manage the switch through your Web browser.
- Features 24 autosensing, autonegotiating 10-/100-/1000-Mbps ports with MDI/MDI-X.
- Password-protected access.
- Supports IEEE 802.1Q VLAN tagging and 802.1p QoS.
- Supports Jumbo Frames and IGMP.
- Rackmount brackets are included.

Item	Code	List Price
Gigabit Web Smart Switch, 24-Port	LGB624A	\$359.95



# Hardened Gigabit Edge Switch

Solid Gigabit switching for industrial environments.

- Rated for operating temperatures of +14 to +158° F (-40 to +70° C).
- 10-/100-/1000-Mbps ports are autosensing for speed and duplex.
- Dual DC power inputs for redundant power.
- DIN rail mount.
- IP50 rated steel housing.
- Plug-and-play convenience.
- ♦♦ **WARRANTY** — 1 Year



The Hardened Gigabit Edge Switch brings eight Gigabit Ethernet ports to harsh industrial environments with temperatures ranging from 14 to 158° F (-40 to +70° C). Its rugged steel enclosure mounts on standard DIN rails. Ethernet ports are autosensing 10/100/1000 Mbps with Auto MDI/MDI-X on all ports.

Dual DC power inputs enable redundant power provisioning. Power inputs are 5-pin terminal blocks for connection to a 9–48 VDC power source.

A power supply is not included. Order PS012 for a non-hardened power supply or PS003A for a hardened power supply.

Item	Code	List Price
Hardened Gigabit Edge Switch, 8-Port	LGH008A	<b>\$259.95</b>
You may also need...		
Power Adapter, 100–240-VAC to 12-VDC	PS012	<b>\$12.95</b>
External 100–240-VAC Power Adapter	PS003A	<b>\$71.95</b>
DIN Rail, 1-m (3.2 ft.)	DR100	<b>\$8.95</b>

# Unmanaged 802.3at PoE Gigabit Ethernet Switch, 8-Port

Add eight high-powered PoE devices to your Gigabit LAN.



- Add up to eight high-powered VoIP phones, wireless access points, security cameras, terminals, and other PoE devices to your 10/100/1000 Ethernet network.
- Features eight shielded PoE ports.
- IEEE 802.3at compliant.
- Backwards compatible with 802.3af PoE.
- Powers devices directly through your UTP Ethernet cable.
- Provides 30 watts of power per port or a total of 200 watts.

- Automatically detects and protects PoE devices.
- Supports 10/100/1000 auto-detection and half-/full-duplex operation.
- Includes a rackmount kit.

Item	Code	List Price
Unmanaged 802.3at PoE Gigabit Ethernet Switch, 8-Port	LPB1308A	<b>\$339.95</b>



## SmartPath Enterprise Wireless System

# Build an enterprise-class wireless network without

- No expensive controllers needed.
- Intelligent APs automatically adjust for traffic, interference, and power conditions.
- Mobile devices get seamless roaming between access points.
- Cloud-based management eliminates CAPEX.
- Helps compliance with standards such as HIPAA and PCI.
- Fast 802.11n wireless supports high-quality voice and video over Wi-Fi.
- Built-in guest portal for secure iPad® and smartphone connectivity.
- Architecture reduces traffic backhauling.
- QoS and security policy are enforced by access points at the network's edge.
- ♦♦ **WARRANTY** — 3 Years



The SmartPath Wireless Access Point (AP) is available as a hardened version (sold without antennas) (LWN602HA, left) or as an indoor model with integral antennas (LWN602A, right).

The Black Box® SmartPath™ enterprise wireless system ditches expensive controllers in favor of intelligent access points. Because SmartPath access points sort and forward packets like a high-end switch, the network is fast and nimble without the latency-causing hairpin traffic patterns typical of a controller-based wireless solution.

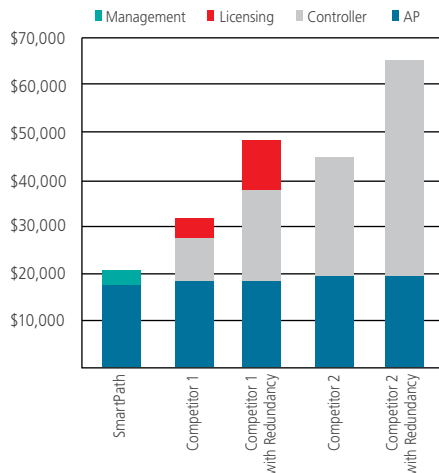
This robust enterprise wireless system combines the stability, security, and speed of a wired network with the versatility and adaptability of a wireless network. It's just what you need to set up fast, 802.11n standard Wi-Fi communications in a logical way.

Its technology differs greatly from other wireless technology available today. You receive speed and reliable wireless communications from a system that's simpler—and more affordable—to deploy.

With SmartPath, you get enterprise-class access points (APs) and a suite of management and security functions that provide all the benefits of a controller-based wireless LAN (WLAN) solution—without requiring a controller or an overlay network.

SmartPath APs work together to improve throughput and provide redundancy for your latest 802.11n wireless devices. The SmartPath system combines a distributed WLAN architecture and best-in-class management without a lot of upfront costs or operating expenses.

Cost comparison: SmartPath vs. top competitors\*:



\* (30) Indoor SmartPath APs (LWN602A) managed via the cloud using (30) SmartPath Enterprise Management System 1-Year Subscriptions (LWN600CM-1) vs. competitor systems with (30) APs, management software, additional licenses (if required), controller(s), and support costs. NOTE: SmartPath Cloud-Based EMS Subscriptions are represented above as "Management" expenses, and there is no separate license purchase required.

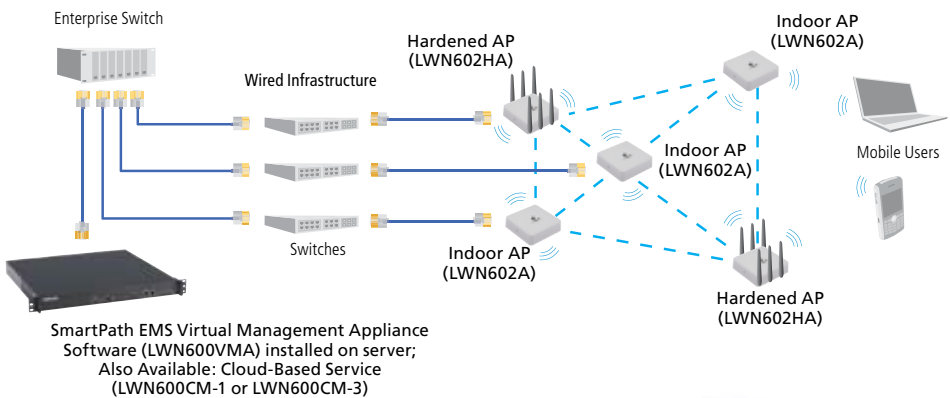


expensive bandwidth-hogging controllers.



*The SmartPath 602HA Outdoor Kit (LWN600A-OUT, shown here with the LWN602HA installed) provides everything you need to install a hardened access point outdoors. Includes (1) NEMA enclosure, (1) pole bracket, assorted hardware, (1) lightning protection device, (1) power supply, and (4) dual-band antennas for (1) AP.*

SmartPath access points forward packets intelligently to the wired network or to another wireless access point.



Because there are no expensive controllers required, you can expand from a few APs to thousands of APs easily—with no hidden upgrade costs. Start small, adding APs into an existing wired network as your budget allows, or build a complete enterprise-grade WLAN.

## Buyers' Checklist

- ✓ How does your wireless network handle visitor access?
- ✓ Do you need to comply with HIPAA, PCI, or other security and privacy standards?
- ✓ Does your wireless network host mobile devices that roam between access points?

**more info** Free Wireless Assessment, Brochures, Webinars, White Papers

LWN602A  
Starting at Price **\$849.95**



Learn more at [blackbox.com/go/SmartPath](http://blackbox.com/go/SmartPath)



Wireless Point-to-Point Ethernet Extender Kit

Extend Ethernet links between buildings wirelessly.  
No laying cable!

FREE

ground shipping on  
orders over \$250.

See page 2.



Questions? Click  
here to chat or  
have us call you.



- Point-to-point wireless Ethernet extension up to 6.2 miles (10 km).
- Tough waterproof enclosure for outdoor use.
- Easy installation and configuration—the extenders are pre-synchronized to work with each other.
- Features 802.11n wireless for fast throughput—40 Mbps at up to 3.1 miles (5 km).
- LED indicator for configuration and alignment.
- Easily managed through a Web interface.
- Features an 8-dBi internal antenna or can be configured to use an external antenna.
- Powered through the Ethernet cable—no outdoor power outlet needed.
- 10/100 Ethernet port with MDI/MDI-X.
- ♦♦ **WARRANTY** — 1 Year

The Wireless Point-to-Point Ethernet Extender Kit is a quick way to extend an Ethernet link between buildings. Because it's wireless, you avoid the hassle and expense of laying cable.

You get a 40-Mbps wireless link up to three miles away—and that's enough bandwidth to support several workstations—with lower speeds at longer distances of up to about 6 miles (9.6 km).

The kit comes with two wireless extenders synchronized to work together. Mount each on a building within line of sight of each other. The extenders are waterproof, weatherproof and compact—about the size of a bottle of water. They blend unobtrusively into building architecture without large, unsightly antennas.

The extenders don't require a nearby power outlet because they receive their power through the Ethernet cable via a 12-VDC power injector included with each extender. An LED indicator shows when the extenders are properly aligned and receiving a strong signal.

The Wireless Point-to-Point Ethernet Extender Kit is a quick, economical way to extend your network's reach to areas such as guard stations or utility buildings, where it's not cost effective to run cable for just one or two workstations.

Item	Code	List Price
Wireless Point-to-Point Ethernet Extender Kit	LWE100A-KIT	\$349.95



## Advanced Console Servers

Redundant Ethernet and power for maximum uptime.

FIPS 140-2  
validated  
module



Top: LES1216A-R2, front view;  
bottom: LES1216A-R2, rear view

- Federal Information Processing Standard (FIPS) 140-2 validated module for enhanced security.
- Dual Ethernet ports with bonding ensure high availability.
- Dual universal AC input for redundant backup power.
- Includes a built-in modem RJ-11 port as well as a DB9 serial port.
- Accessible in band with a Web browser, out of band via modem, or directly through the local console port.
- Supports IPMI, ILO, LOM, DRAC, and RSA.
- Protects data with Secure Shell (SSH) encryption, SSH tunneled serial bridging, SSH tunneling for TCP/UDP, IP packet filtering, and more.
- ♦♦ **WARRANTY** — 5 Years

Black Box® Advanced Console Servers provide secure server access with the features you need for continuous, reliable access to console ports on your remote devices.

Dual 10/100 Ethernet ports with bonding ensure high availability. Set up automatic failover and an additional out-of-band broadband connection. They also feature 4 GB of USB flash memory with an included 4 GB flash drive for local FTP/TFTP storage.

Item	Code	List Price
Advanced Console Servers		
8-Port, (2) RJ-45	LES1208A-R2	<b>\$1334.95</b>
16-Port, (2) RJ-45	LES1216A-R2	<b>\$1849.95</b>
32-Port, (2) RJ-45	LES1232A	<b>\$2365.95</b>
48-Port, (2) RJ-45	LES1248A	<b>\$2879.95</b>

## Remote Console Managers

Versatile remote serial access with redundant links for automatic failover.

FIPS 140-2  
validated  
module



- Federal Information Processing Standard (FIPS) 140-2 validated module for enhanced security.
- Provides optional redundant backup paths via 802.11g wireless, dialup modem, or 3G cellular.
- Seamless automatic failover.
- Integral temperature sensors enable you to monitor conditions at the remote site.
- USB ports enable you to store logs and configurations on a flash drive.
- GUI Web-based management.
- Advanced security uses LDAP, Radius, or TACACS+ authentication, yet maintains a local user list for out-of-band communications through modem or cellular links.
- ♦♦ **WARRANTY** — 3 Years

Item	Code	List Price
Remote Console Managers		
2-Port	LES1202A	<b>\$308.95</b>
3-Port w/Wireless	LES1203A-11G	<b>\$438.95</b>
3-Port w/Modem	LES1203A-M	<b>\$514.95</b>
4-Port	LES1204A	<b>\$380.95</b>
4-Port w/3G Cellular	LES1204A-3G	<b>\$747.95</b>



## EncrypTight™ WAN Encryption

### Secure WAN links without tunnels!

- No VPN tunnels!
- Doesn't slow network performance—no delays, no jitter, no latency.
- Easy to set up, configure, and manage.
- Can be administered from a single location.
- Supports dual-carrier networks.
- VoIP and video compatible.
- Compatible with multicast applications.
- Encrypts at OSI Layer 2, 3, or 4.
- Preserves Layer 4 services.
- Works on the Internet or on private WANs.
- Transparent to network operation and applications, including VoIP.
- Because headers are intact, data "looks" unencrypted and can be sent into areas that restrict encrypted data.
- Available in sizes from 50 Mbps to 10 Gbps.
- ♦♦ **WARRANTY** — 1 Year



Questions? Talk to an  
EncrypTight specialist  
at 888-245-6215.

EncrypTight™ is an encryption solution that overcomes the limitations associated with IPsec VPN tunnels. It brings you air-tight encryption across any WAN—even the Internet—without the hassle of setting up a VPN tunnel for each connection. Layer 4 encryption capability leaves packet headers intact, making encrypted data far more compatible with network operations. Plus, EncrypTight doesn't add latency to bog down network operations—it's totally transparent.

#### The not-so-private MPLS WAN

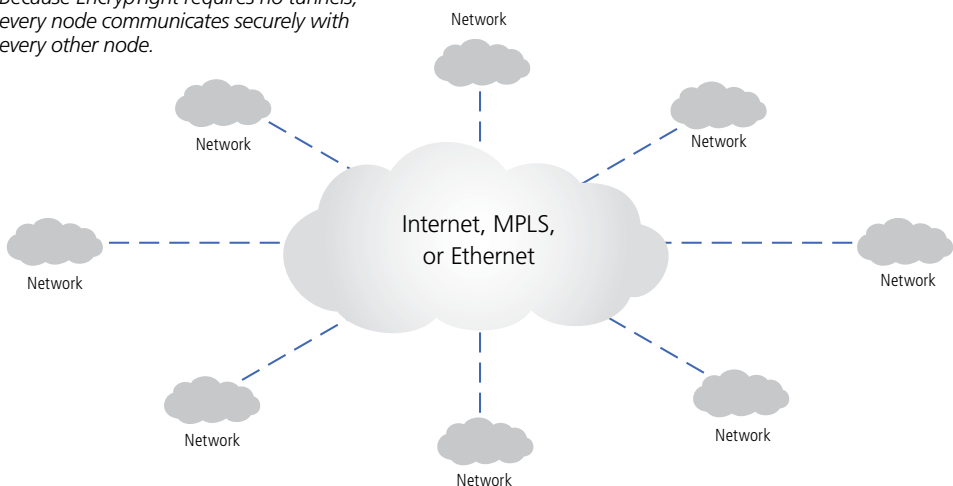
Many organizations don't encrypt their data because it's traveling on a "safe" MPLS network. Although MPLS networks provide more reliable connections than the Internet, they're not private.

MPLS is technically a VPN that mimics privacy by logically separating data with labels. Although the data traffic is kept separate from other traffic, it can still be easily intercepted at any node. The only way to ensure data security over an MPLS network is by encrypting data.

#### Breaking out of the tunnel

When remote sites multiply, the number of VPN tunnels increases exponentially. EncrypTight eliminates the need to establish point-to-point tunnels between each pair of remote sites, freeing network administrators for other tasks. With EncrypTight, every network on your WAN can establish an instant encrypted connection to every other network equipped with EncrypTight.

*Because EncrypTight requires no tunnels, every node communicates securely with every other node.*







ET1000A

**EncrypTight™**  
BLACK BOX WAN ENCRYPTION



ET0010A



Learn more at [blackbox.com/go/EncrypTight](https://blackbox.com/go/EncrypTight)

### Layer 4 encryption

In addition to Layer 2 Ethernet frame encryptions and Layer 3 IP packet encryption, EncrypTight offers a Layer 4 payload-only encryption option. Layer 4 encryption offers many advantages, including the ability to pass encrypted data through NAT devices and compatibility with policy-based routing and load balancing that require Layer 3 addresses to be intact.

Layer 4 encryption leaves Layer 3 headers intact, making it possible to troubleshoot a network without turning off encryption.

### Central management

Manage all your EncrypTight appliances with EncrypTight Management Software. The simple drag-and-drop interface scales seamlessly and enables you to set encryption policies based on IP addresses, port numbers, protocol IDs, or VLAN tags. You can quickly change policies across the entire WAN with out interrupting network traffic. EncrypTight Management Software generates, and securely pushes, encryption keys and policies to appliances throughout the WAN. Logging and auditing functions enable you to collect and monitor important criteria such as enforcement point status, as well as policy, password, and device configuration changes.

### Seamless scalability

Because there are no tunnels to set up, it's easy to deploy EncrypTight across large WANs. For instance, an organization with many sites around the world could add a

new site to its WAN without having to establish a VPN tunnel to every other site. Additionally, EncrypTight Management Software enables network administrators to centrally manage security across the entire WAN using a simple drag-and-drop interface.

### Compliance

EncrypTight helps you comply with HIPAA, HITECH, PCI, or other industry or government data-protection standards. EncrypTight offers AES 256-bit encryption. Plus, its logging and auditing functions help you save and organize the records required by many of these standards, reducing the scope of audits with thorough recordkeeping.

## Buyers' Checklist

- ✓ Is your WAN a nest of VPN tunnels?
- ✓ Do you find that setting up and maintaining VPN tunnels is becoming a drain on IT staff time?
- ✓ Does your WAN extend through multicarrier environments?
- ✓ Do you need to comply with HIPAA, HITECH, PCI, or other security standards?

ET0010A  
**Starting at \$1055.95**



## Pro Switching System Plus

Intelligent, secure switching for access control, disaster recovery, and backing up your network.

- Chassis holds 16 switch modules.  
Mix data, voice, video, and AC power switching modules in a single chassis.
- Cascade multiple 18-slot chassis to support up to 4080 ports.
- Use with copper and/or fiber cable.
- ♦♦ **WARRANTY** — 1 Year

This intelligent ganged switching system consists of a chassis and interface cards for incredible flexibility and performance. Switch one card individually or the entire rack through a Controller Card. You can even daisychain chassis to control up to 4080 individual ports.

For fail-safe operation, the system uses proprietary micro-mirror or latching relay switching technology. Data continues to pass through even if the power has been cut off. The cards perform Layer 1 switching, so the system operates independently of data rates, protocols, formats, or signal levels.

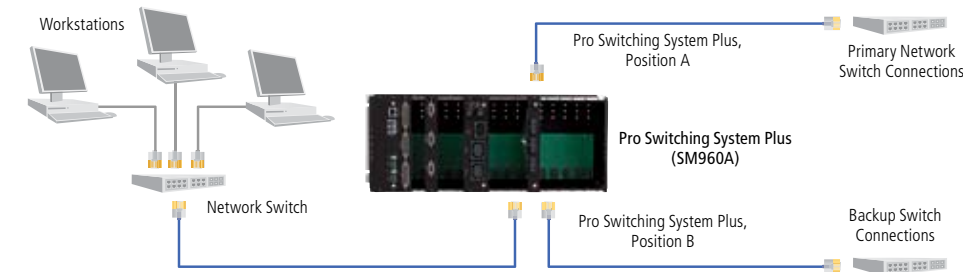


SM960A: front view

Switching cards are available for RS-232, video, fiber, and CAT5e/CAT6 connections. Just order the cards you need, a power supply (or for redundancy, order two) and an AC Power A/B Switch Card to power a backup network.

One Control Card is required for each chassis (it takes up two slots). You can order a card with a serial controller or with an SNMP Ethernet controller (includes GUI Switchcenter software). These intelligent cards enable you to switch from anywhere in the world via an RS-232 or IP connection.

### Network Disaster Recovery/Continuation of Operations



Item	Code	List Price
Pro Switching System Plus		
18-Slot Chassis, 4U	SM960A	\$412.95
Power Supply, 120–240 VAC, External	SM961A-PS	\$77.95
Controller Cards		
SNMP, RS-232, Manual Switching	SM962A	\$619.95
RS-232, Manual Switching	SM963A	\$386.95
Manual Switching	SM964A	\$308.95
AC Power A/B Switch Cards, 120-VAC		
Logic Only, 1 In/2 Out	SM968A	\$269.95
Processor, with Networked Reporting		
1 In/2 Out	SM969A	\$289.95
2 In/1 Out	SM973A	\$289.95
NOTE: For 240-VAC cards, see <a href="http://blackbox.com">blackbox.com</a> .		

Item	Code	List Price
Pro Switching System Plus (Continued)		
A/B Switch Cards		
DB25	SM965A	\$185.95
DB9	SM966A	\$185.95
DB15	SM967A	\$185.95
Video F-Connector, 75-Ohm	SM976A	\$179.95
Fiber Optic, ST, Latching	SM977A-ST	\$715.95
Fiber Optic, SC, Latching	SM977A-SC	\$694.95
RJ-45 CAT5	SM978A	\$185.95
RJ-45 CAT6 10-GbE	SM979A	\$231.95
RJ-45 CAT6 10-GbE, Dual-Port	SM980A	\$448.95
Blank Rear Panel	SM981	\$10.95

For help configuring your switch, contact Tech Support.



Pro Switching System, 2U

Get full-performance gang-switching capabilities in an ultra-compact, 2U chassis.

- Mix hot-swappable RS-232, RS-530, video, fiber, and CATx A/B switching modules in a single chassis.
- Cascade multiple chassis and racks.
- Secure switching via latching relays.
- Control switching locally or remotely.
- ♦♦ **WARRANTY** — 1 Year

This intelligent ganged switching system consisting of an ultra-compact 2U 18-slot chassis and a selection of A/B switching, controller, and power supply cards.

Controller Cards take up only one slot, and Power Cards take up one slot or two slots for redundancy, leaving you with 13–15 slots for A/B Switch Cards. All occupy one slot, except for the DB25 Cards, which require three slots.

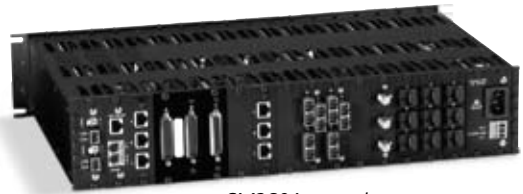
Switch one card individually or switch the entire chassis through a Controller Card. You'll need one Controller Card per a chassis. (If you plan to daisychain multiple chassis, the Controller Card in the first chassis controls the entire system.) You can choose an RS-232 Only Controller Card, which enables you to gang switch via the manual toggle switch or with serial commands, as well as an RS-232/Ethernet (SNMP) Controller Card, which enables you to switch the chassis from anywhere via an RS-232 or IP connection.

If want to extend RS-232 or IP control to a second daisychained Pro Switching System chassis, order the SNMP Expansion Controller Card. This enables you to send hardware control signals and control the daisychained system with RS-232 messages through the RS-232/Ethernet (SNMP) Controller Card.

A/B Switch Cards are available for RS-232, video, fiber, and CAT5e/CAT6 connections. For fail-safe operation, all the cards (except those noted) use proprietary latching or micro-mirror relay switching technology—which means data can continue to pass through even if the power has been cut off. Because the cards perform Layer 1 switching, the system operates independently of data rates, protocols, formats, or signal levels.



SM260A: front view



SM260A: rear view

Item	Code	List Price
Pro Switching System, 2U		
18-Card Chassis	SM260A	\$411.95
Power Supply, 120–240 VAC, External	SM961A-PS	\$77.95
Power Supply Card, AC External Adapter	SM261A-CARD	\$205.95
Redundant Power Supply Cards		
(NOTE: Each card requires two chassis slots.)		
100–240-VAC Input	SM261A-VAC	\$386.95
-48-VDC Input	SM261A-VDC	\$374.95
Controller Cards		
RS-232/Ethernet (SNMP)		
	SM262A	\$772.95
RS-232 Only	SM263A	\$386.95
SNMP Expansion	SM264A	\$494.95
A/B Switch Cards		
DB25/RS-232	SM265A	\$437.95
DB25/RS-530	SM266A	\$424.95
Video F-Connector		
Latching	SM276A-LCH	\$199.95
Non-Latching	SM267A	\$199.95
Multimode Fiber Optic		
ST®, Latching	SM277A-MM-ST-LCH	\$798.95
SC, Latching	SM277A-MM-SC-LCH	\$774.95
ST, Non-Latching	SM277A-ST	\$774.95
SC, Non-Latching	SM277A-SC	\$774.95
Single-Mode Fiber Optic		
ST, Latching	SM278A-SS-ST-LCH	\$1894.95
SC, Latching	SM278A-SS-SC-LCH	\$1894.95
ST, Non-Latching	SM278A-ST	\$1894.95
SC, Non-Latching	SM278A-SC	\$1894.95
RJ-45 CAT5	SM268A	\$205.95
RJ-45 CAT6	SM269A	\$283.95
Blank Panel, Front or Rear, 2U		
	SM279A-BLNK	\$10.95



Pro Switching System 1U NBS, RJ-45 A/B

Prevent costly downtime with this copper switching system.

- Multiport switching to prevent lost productivity and business downtime.
- Latches the A/B position to keep signals moving even if power is lost.
- Enables individual or simultaneous (ganged) control of circuits.
- Highly reliable internal telecomm relays.
- ♦♦ **WARRANTY** — 1 Year

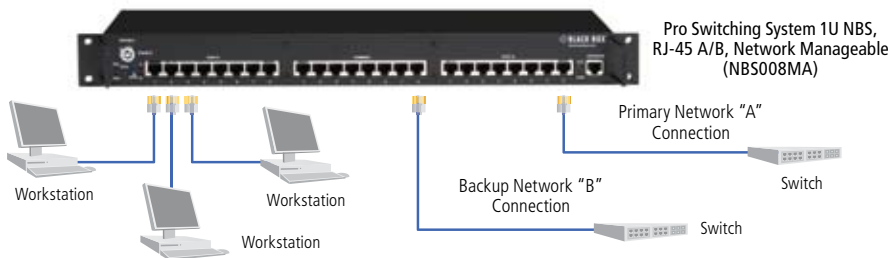
Add network backup and failover switching with this Layer 1 switching system. It's ideal for mission-critical applications, with dual power inputs for redundancy and a keylock to secure gang switching functions.



NBS016MA: top: rear view; bottom: front view.

Switch on the front or via an RS-232 workstation, or with the network manageable models, remotely over a TCP/IP link. Port settings are also software controllable.

Daisychain units to control up to 4080 ports or 255 chassis as part of a single system.



Item	Code	List Price
Pro Switching System 1U NBS, RJ-45 A/B		
Pins 1/2 & 3/6 8-Port	NBS008A	\$655.95
8-Port Network Manageable	NBS008MA	\$855.95
16-Port	NBS016A	\$799.95

Item	Code	List Price
Pro Switching System 1U NBS, RJ-45 A/B, continued		
16-Port Network Manageable	NBS016MA	\$999.95
All Pins 8-Port	NBSALL8	\$799.95
8-Port Network Manageable	NBSALL8MGR	\$999.95

Pro Switching System 1U NBS, Fiber Multimode SC A/B

Keep data moving on your fiber-terminated circuits.

- Unique latching optical switch mechanisms and micro-mirrors optically route signals between ports.
- Forms bidirectional data paths to 62.5-/125- $\mu$ m multimode segments for each port channel.
- Supports connections to Gigabit-speed fiber networks.
- ♦♦ **WARRANTY** — 1 Year

This system is like the copper A/B switching system above, with the same management, switching, port latching, and locking port features, only this one is for fiber networks.

It's ideal for government networks, broadcast networks, private medical/healthcare systems, and factory/industrial applications.



NBS006MA

Daisychain multiple chassis together (up to 255 in all) and control them as a single system.

Item	Code	List Price
Pro Switching System 1U NBS, Fiber Multimode SC A/B		
4-Port	NBS004A	\$2395.95
4-Port Network Manageable	NBS004MA	\$2595.95
6-Port	NBS006A	\$3295.95
6-Port Network Manageable	NBS006MA	\$3495.95



### Latching Fiber Optic AB, ABC, and ABCD Switches

For ultra-secure, critical-circuit switching, use these micro-mirror optical switches.

- Switches latch mirror movement mechanically into position and hold it there.
- No optical-to-electrical conversion between connections. Internal mirrors move data between ports optically—technology that’s trusted and time tested.
- Ideal for government, healthcare, utility companies, or other applications where a private, data-sensitive network connects to a publicly accessible one.
- ♦♦ **WARRANTY** — 1 Year



These reliable Latching Fiber Optic AB, ABC, and ABCD Switches use micro-mirrors instead of electronics to route data signals from one fiber optic port to the next. To route signals, just turn a knob on the front panel.

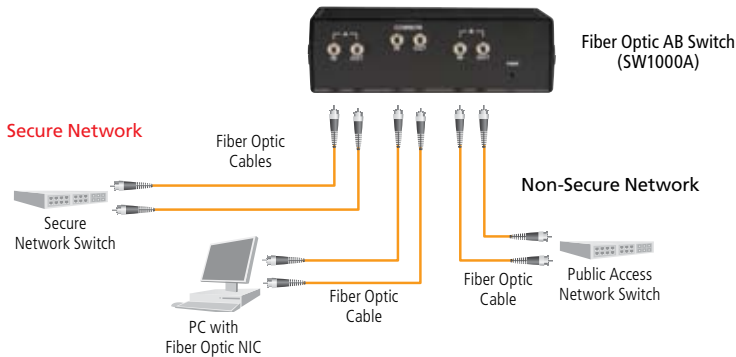
And unlike conventional electronic switches, there are no complex and vulnerable electronic circuits to monitor and protect from intrusion, component failure, or interference.

The switches are available in latching and non-latching models. The optical mirror movement on the latching versions maintains

the selected position even when there’s a power failure.

The switches work with 62.5-/125-micron multimode fiber cabling and operate transparently to signal rates, formats, and wavelengths, so you don’t require an upgrade when your data protocols change or speeds increase.

*NOTE: AB switches with loopback are available as well as switches for single-mode fiber. To order, call our FREE Tech Support.*



Item	Code	List Price
Fiber Optic AB Switches		
Non-Latching ST®	SW1000A	\$715.95
Non-Latching with Off Position, Rackmount	ST	SW1003A
		\$1334.95
Latching	ST	SW1002A
	SC	SW1008A
		\$921.95
		\$921.95

Item	Code	List Price
Fiber Optic ABC Switches		
Non-Latching ST	SW1007A	\$994.95
Latching, Rackmount	ST	SW1004A
		\$1436.95
Fiber Optic ABCD Switches		
Non-Latching ST	SW1006A	\$1294.95
Latching	ST	SW1005A
		\$1745.95



Learn more at [blackbox.com/go/FiberSwitches](https://blackbox.com/go/FiberSwitches)



# VoIP Overview

These days, the question isn't *if* you should move to a VoIP system, but *when*. Although VoIP systems have been commonplace in larger organizations, they are now becoming more affordable and practical for small- to medium-sized businesses (SMBs) to implement. VoIP systems benefit everyone from telecommuters to the managers and users of large call centers.

## Moving towards VoIP.

More and more companies are migrating from a traditional private branch exchange (PBX) telephony system to a voice-over-IP (VoIP) system. These converged networks take advantage of IP communications to better manage and transmit voice, data, images, video, e-mail, faxes, and more.

### What is VoIP?

A cost-saving alternative to traditional telephony service, VoIP delivers voice calls over a data network that uses packet switching instead of circuit switching.

There are different types of VoIP networks. Calls can be "Internet telephony," that is, sent over the public Internet, or "enterprise IP," which are calls originating on the corporate IP network and sent over the corporate intranet, or a combination of the intranet and a Public Switched Network (PTSN). The latter is called an IP PBX system.

### VoIP options.

The best VoIP option for you depends on the size of your organization, the number of users, how many locations you have, etc. There are two basic types of offerings: hosted services or on-premises services, also called customer premise equipment (CPE) services.

Large organizations typically use CPE systems where the equipment is physically on-site. These offer much greater control over features and capabilities, but they also require a much greater initial capital outlay. Small businesses usually use hosted services as they're easier to manage and have a much smaller initial capital expenditure.

VoIP offerings include:

**Converged voice/data.** There are basic VoIP systems using existing phone systems. The most basic are software-based, such as Skype®. As software-based systems continue to grow and mature, they are becoming more appealing to the SMB market.

**Hosted IP PBX.** In a hosted system, the service provider, rather than the end user, deploys a PBX system. The end user needs to purchase IP phones, but not a PBX.

**Managed IP PBX.** This is an on-site VoIP system including the system, services, and support. It requires a greater capital expenditure but it gives the user a flexible call routing platform, management of PBX functions, and centralized call routing.

**Session Initiation Protocol (SIP) trunks.** A much newer technology, SIP trunks enable converged IP applications within and outside the enterprise. SIP trunks offer significant savings, eliminating the need for local PSTN gateways. They also offer maximum control of multimedia communication sessions over an IP network.

### VoIP considerations.

VoIP depends on having a fast, reliable network to operate. A fast connection with guaranteed bandwidth is not a problem in a corporate intranet. But if you're using the Internet for VoIP, you're using a public network that may be subject to slowdowns. The quality of your connection may be unacceptable when Web usage is high.

You may face many of the same challenges experienced with sending high-resolution video over a LAN, especially if it's a converged voice/video/data application. Therefore, you'll need to test the speed of connections and the network for available bandwidth, and have the ability to prioritize switched packets for QoS delivery.

Other common issues with a VoIP system have to do with latency (resulting in people speaking over one another), transmission loss, jitter (common to congested networks with bursty traffic), and sequence errors, or changes in the order of packets at the receiving end that degrades sound quality.

**For help setting up a problem-free VoIP system, talk to Black Box today.**



## Hybrid PBX & SIP Gateways

Simple, affordable ways for your office to communicate through both telephone and VoIP lines.

- Combine traditional telephony and VoIP into a single device.
- Enable you to communicate through VoIP or SIP lines for lower-cost long-distance calling and unified communications.
- Support customized greetings per user and include e-mail, fax, and voice mail notifications.
- ♦♦ **WARRANTY** — 2 Years

These powerful gateways integrate traditional telephone and VoIP for more cost-effective voice communications, routing calls accordingly to desk, home, or cellular phones. They enable you to save on charges for long-distance calling, voice mail, and other services right out of the box.

Fully functional PBX appliances, they feature dual FXS connections for phones or fax

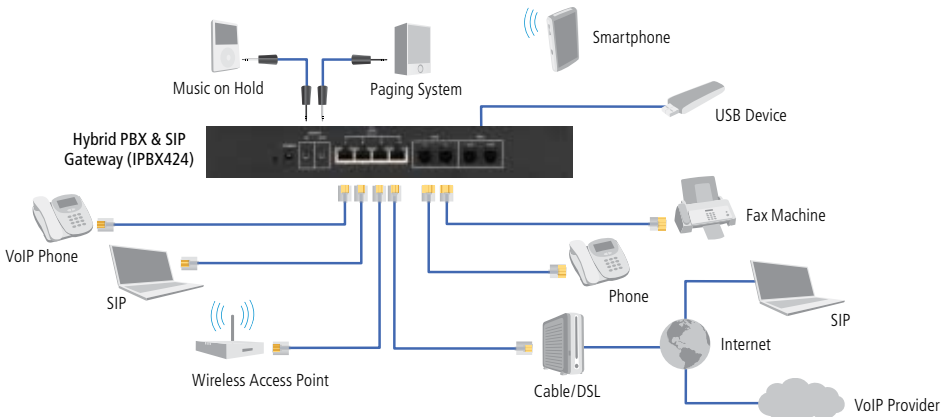


machines, 4 or 12 FXO connections for analog phone lines, and an integrated four-port 10-/100-Mbps Ethernet switch.

What's more, the gateways feature a high-performance CPU, hardware-based echo cancellation, and QoS.

Plus, the gateways offer easy setup through a Web-based configuration interface. They also seamlessly detect and install SIP phones so every user in your office can be making and receiving calls in no time at all.

Even better, users can connect through PBX with SIP phones even when working remotely.



### Numerous cost-saving and call-enhancing features:

- Unlimited VoIP phone numbers.
- Voice mail—they store and convert voice mail messages and send them to e-mail as a WAV or MP3 file attachment.
- Full PBX feature set, including call hold, call transfer, call forward, caller ID, and call waiting, plus conferencing.
- Long-distance calling from mobile phones.
- Call pick up—answer any call, whether on hold or ringing, even if it's coming from another line.
- Customizable settings per user.
- VoIP failover—if your Internet connection is lost, calls can be made through the POTS line.
- Digital receptionist—dial-by-name directory and the ability to create personalized greetings for every VoIP number.

*NOTE: The gateways work with Black Box® brand SIP Phones. For our full selection, see [blackbox.com](http://blackbox.com).*



Item	Code	List Price
Hybrid PBX & SIP Gateways		
with (4) FXO, (2) FXS, and (4) 10/100 Ports		
	IPBX424	<b>\$1199.95</b>
with (12) FXO, (2) FXS, and (4) 10/100 Ports		
	IPBX1224	<b>\$1599.95</b>



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